THE WASHINGTON CONVENTION.

The 4th annual convention of the American Society of Civil Engineers met according to programme (heretofore published), at Willard's Hall, Washington, D. C., at 10 a. m. Tuesday, 16th. The following members of the society were present:

Wm. M. Allaire, Engr. U. S. Electric Light Co. New York.
Edward R. Andrews, New York.
Geo. D. Ansley, City Engineer, Montreal, Canada.
A. Bonzano and wife, of Clarke, Reeves & Co., Phoenixville, Pa.
John Bogart, Secy. Am. Soc. C. E., wife and sister, New York.
A. P. Boller, New York.
G. Bouscaren, Cons. Eng. C., N. O. & T. P. R. R., Cincinnati.
H. D. Blunden, 1st Asst. Eng., N. Y., L. E. & W. R. R., New York.
Lyman Bridges, Ch. Eng. Cal. Central R. R., San Francisco.
L. L. Buck, Brooklyn, N. Y.
James D. Burr and wife, Lantry & Burr, Topeka, Kan.
Wm. H. Burr, Troy, N. Y.
Lt. Col. T. L. Casey, Corps of Engrs. U. S. A., Washington.
O. Chanute, Ch. Eng., N. Y., L. E. & W. R. R., New York.
S. H. Chittenden, East River, Conn.
Thomas C. Clarke, New York.
Amory Coffin, Engr. Phœnix Iron Co., and wife and Miss Reeves, Phœnixville, Pa.
Mendes Cohen, Baltimore, Md.
F. Collingwood, Ass't Eng. East River Bridge, New York.
Theo. Cooper, New York.
E. L. Corthell, Ch. Asst. Eng. N. Y., W. S. & B. R. R., New York.
J. J. R. Croes, New York.
Chas. Davis, County Engr., Allegheny Co., Pa.
Jos. P. Davis, Engr. Am. Bell Telephone Co., and sister, New York.
Fred. de Funiak, Gen. Man. L. & N. R. R. and Secretary, Louisville, Ky.
Alex. Dempster, Pittsburgh, Pa.
W. A. Doane, Asst. Eng. R., W. & O. R. R., Oswego.
John B. Duncklee, U. S. Ass't Engr., Washington, D. C.
T. Egleston, School of Mines, Columbia Coll., New York.
J. W. Ferguson, Asst. Eng. N. Y., L. E. & W. R. R., Hornellsville, N. Y.
Chas. A. Ferry and wife, New Haven, Conn.
Prof. R. Fletcher and wife, Hanover, N. H.
Clark Fisher, Trenton, N. J.
Sandford Fleming, Ottawa, Canada.
Edward A. Flint, Boston, Mass.
C. G. Force, Cleveland, Ohio.
C. E. Fowler, City Engineer, and daughter, New Haven.
James B. Francis and wife, Lowell, Mass.
John R. Freeman, Lawrence, Mass.
A. Fteley, Chief Asst. City Eng., Boston, Mass.
Chas. E. Goad, Montreal, Canada.
A. Gottlieb, Pres. Keystone Bridge Co., Pittsburgh, Pa.
Fredk. Graff, Hydraulic Engineer, and wife, Philadelphia, Pa.
Gen. Geo. S. Greene and wife, New York.
S. S. Haight, Asst. Eng. Dept. Pub. Parks, New York.
Wm. G. Hamilton, Pres. Hamilton Steeled Wheel Co., Vice-Pres. Central & S. A. Telegraph Co., New York.
James H. Harlow, Eng. Monongahela Navigation Co., and wife, Pittsburgh, Pa.
Wm. P. Harris, Supt. H. Div. C. & O. R. R., Huntington, W. Va.
Clemens Herschel, Hydraulic Engineer Holyoke Water Power Co., and wife, Holyoke, Mass.
Albert B. Hill, Asst. City Engineer, New Haven, Conn.
Thomas C. Keefer, Ottawa, Canada.
John Kennedy, Chief Eng. Harbor Commis'rs, Montreal, Canada.
Louis Lesage, Supt. Water-Works, Montreal, Canada.
G. P. Low, Jr., Supt. Road Dept. E. C. & N. R. R., Norfolk, Va.
Wm. H. Lotz, Chicago, Ill.
Capt. O. E. Michaelis, Corps Ordnance U. S. A., Philadelphia, Pa.
D. E. McComb, Asst. Eng. Dist. Comms., Washington, D. C.
Thos. C. McCollom, Civil Engineer, U. S. N., New London, Conn.
T. H. McKenzie, Southington, Conn.
George W. McNulty, Asst. Eng. East River Brdge, Brooklyn, N. Y.
D. N. Melvin, Cons. Eng., and wife, Staten Island.
Geo. S. Morison, N. Y.
Alfred Noble, Gen. Supt. St. Mary's Falls Canal, Sault Ste. Marie, Mich.
J. A. Ockerson, Asst. Eng. Miss. River Com., St. Louis, Mo.
L. T. Olney, Res. Eng. M. Branch N. R. R., Middletown, N. Y.
S. C. Pierson, City Surveyor, Meriden, Conn.
Geo. H. Pegram, Ch. Eng. Edge-Moor Iron Works, Wilmington, Del.
F. C. Prindle, Civil Engineer U. S. N., Brooklyn, N. Y.
Jos. W. Putnam, New Orleans, La.
Wm. W. Reid, Erie, Pa.
David Reeves, Pres. Phœnix Iron Co., Phœcenixville, Pa.
Joseph R. Richards and wife, Boston, Mass.
Thomas F. Rowland, Continental Iron Works, Greenpoint, N. Y.
Wm. H. Searles, Newburgh, N. Y.
R. A. Shailer, Asst. Supt. Edge-Moor Iron Co., Wilmington, Del.
T. P. Stearns, Asst. Eng. Imp. Sewerage of Boston, Atlantic, Mass.
J. G. Van Horne, wife and sister, Jersey City, N. J.
Ashbel Welch, President Am. Soc. C. E., daughter and niece, Lambertville, N. J.
Ashbel Welch, Jr., and wife, Lambertville, N. J.
C. D. Ward, Jersey City, N. J.
L. B. Ward, Jersey City, N. J.
Prof. H. F. Walling, U. S. Coast Survey, Washington, D. C.
John W. Weston, Chicago, Ill.
D. J. Whittemore, Ch. Eng. C., M. & St. P. R. R., Milwaukee, Wis.
Wm. H. Wiley, New York.
Wm. E. Worthen and wife, New York.

President Ashbel Welch called the meeting to order, and Col. T. L. Casey, U. S. A., in the absence of Gen. Wright, Chief of Engineers, U. S. A., who was confined to his home by sickness, was elected permanent chairman. Col. Casey welcomed the society in a few brief remarks; he referred to the scarcity of engineering works of great interest in Washington, but mentioned the water-works, which included an aqueduct with the largest span stone arch known to exist; there was the underpinning of the Washington monument, and also the harbor and the well advertised flats which have furnished the District doctors with a good text for many years; the insufficient water supply was also mentioned, and to the above and other matters the attention of the engineers was invited.

Secretary Bogart then announced the programme of the sessions. This was published in full in this journal last week, and the only change in the printed programme distributed to the members by the local committee is that on Saturday an excursion to Pen-Mar was arranged, and so timed as to enable members to reach New York by 10.20 p. m. same day. This programme we may be certain was well carried out under the supervision of the very able local committees. The first paper read was by Capt. O. E. Michaelis, on "An Instance of Zymotic Disease in Metal." The annual address of the President was delivered on Tuesday evening; on Wednesday morning Washington monument was visited and the different stages of the work were explained by Col. Casey, to whose intelligent designing and superintendence the success of the work is due.* At the afternoon session the Committee on the Preservation of Timber made a verbal report, which was followed by a brief discussion.

A report was then read upon the subject of standard time by Mr. Sandford Fleming, of Ottawa, Canada, chairman of the committee appointed by the Society at its meeting in Montreal to take into consideration the whole question of standard time. At the annual meeting of the society in New York on Jan. 17, the committee made its first report, submitted a scheme for the establishment of a prime meridian and of uniform standard time, and suggested the expediency of obtaining "an expression of opinion upon the various points which presented themselves from as large a number of practical and scientific men as possible." This suggestion was approved by the society, and the committee was further authorized and requested to take such steps as might be necessary to obtain information which would enable it to report definitely at a future meeting. The committee thereupon prepared a series of questions to cover the whole subject, and sent copies of it, together with printed copies of the scheme proposed for the establishment of standard time, to a large number of persons throughout the country who are directly and practically interested in the question. By the scheme referred to it is proposed:

First. To establish one universal standard time, common to all peoples throughout the world, for the use of railways, telegraphs and steamboats, for the purposes of trade and commerce, for general scientific observations, and for every ordinary local purpose.

Second. It is proposed that standard time everywhere shall be based on the one unit measure of time denoted by the diurnal revolution of the earth as determined by the mean solar passage at one particular meridian to be selected as a time zero.

Third. The time zero to coincide with the initial or prime meridian to be common to all nations for computing terrestrial longitude.

Fourth. The time zero and prime meridian of the world to be established with the concurrence of civilized nations generally.

Fifth. For the purpose of regulating time every where it is proposed that the unit measure, determined as above, shall be divided into 24 equal parts, and that these parts shall be defined by standard time meridians established around the globe, 15° of longitude or one hour distant from each other.

Sixth. It is proposed that standard time shall be determined and disseminated under governmental authority; that time signal stations be established at important centers for the purpose of disseminating correct time with precision, and that all the railway and local public clocks be controlled electrically from the public time station, or otherwise kept in perfect agreement.

Seventh. The adoption of the system in the United States and Canada would, exclusive of Newfoundland and Alaska, have the effect of reducing the standards of time to four. These four standards, precisely one hour apart, would govern the time of the whole country, each would have the simplest possible relation to the other, and all would have equally simple relations to the other standards of the world.

Finally. It is proposed to have only one series of hours in the day, extending from midnight to midnight and numbering from 1 to 24, without interruption, to number the hours between midnight and noon (1 to 12) precisely as at present, and to denote the hours between noon and midnight by letters of the alphabet.

To the series of questions which accompanied this scheme the committee has received hundreds of replies, and Mr. Fleming, in his report to the society, gave a classified statement of their purport, as follows: Ninety-seven per cent. of all the writers approve the scheme; 76 per cent. express themselves as in favor of four standard meridians in North America, one hour, or 15°, apart; 6 per cent. favor two meridians, and a small minority prefer one continental meridian. In reply to the question with regard to a change in the notation of the hours of the day, a very large majority of the committee's correspondents—92 per cent. of the whole number—express themselves in favor of counting from 1 to 24 consecutively. In conclusion Mr. Fleming said: "Upon the replies received to its questions, the committee is fully warranted in reporting that there is throughout the country a very strong sentiment in favor of establishing a system of standard time upon the basis of the scheme which the society now has

*A full and illustrated description of this remarkable feat in engineering is published in ENGINEERING NEWS, Feb. 7, 1880.

under consideration. The report of the committee was approved by the society, and resolutions were adopted requesting Congress to take the initiative step by endeavoring to establish a prime meridian which shall be common to all nations.

The solemn ceremony of being "received" by the President, which is the "regular thing" to do in Washington, was performed by the members at 4 p. m. "by appointment."

At the evening session Mr. A. G. Menocal' U. S. N., read a paper on the Reconstruction of a Quay Wall at Norfolk, Va. Papers were also read on Tests of Structural Material, and the Overflow of the Mississippi. The report of the Committee on Standard Time favored basing it on the one unit measure of time denoted by the diurnal revolution of the earth as determined by the mean solar passage at one particular meridian.

On Thursday the members made a visit to Mt. Vernon, and on their return stopped at the navy-yard, and then continued up the harbor and inspected the flats. In the evening the President of the society gave a reception at Williard's.

OHIO INSTITUTE OF MINING ENGINEERS. —NELSONVILLE MEETING.

EDITOR ENGINEERING NEWS:

The Ohio Institute of Mining Engineers met in Nelsonville, Athens County, on Thursday last, and after a profitable session of two days adjourned to meet in Youngstown in October next.

Nelsonville is one of the oldest mining towns of the Hocking Valley, and is pleasantly situated on the left bank of the Hocking River. The Ohio Canal also passes through the village, which, completed from Columbus to Athens in 1833, was for years the great coal carrier of the valley. Now the Columbus & Hocking Valley Road does most of the coal business, shipping annually one and a quarter million tons. The mines are mainly located below the village of Nelsonville, on the Hocking River, though the extensive mines of Peter Hayden are situated 5 miles above Nelsonville, and the mines of W. B. Brooks & Sons are opened on both sides of the river in the immediate neighborhood of town. Just below town are the mines of C. L. Paston & Co. and T. Longstreth, for many years opened and worked. There are a number of new plants around and below town, and on Monday Creek, the largest and most important of which are the mines of the Akron Iron Company, which has a blast furnace alongside of the mines; the mines of the Hocking Iron Company at Orbiston, which has also a blast furnace. These furnaces are large, well-built structures. The whole valley is covered with mines and blast furnaces. It can, with propricty, be called the Black Country of Ohio, upward of one-third the coal production of the State being drawn from this region alone.

A number of the visiting engineers to Nelsonville session visited the mines on the afternoon of Thursday to examine the Harrison coal cutting machines in use in Brooks' mines, and all Friday was devoted to an inspection of the leading mines of the district. There were two sessions of the engineers, at the first of which five papers were read by members—one by Prof. Edward Orton, State Geologist, on the "Lower Coal Measures of Ohio;" one by J. G. Chamberlain, on the "Social Condition of our Working Miners;" one by P. M. Hazeltine, on the "Early Development of the Mahoning Valley Region," and on "General Mining Engineering Subjects;" one by Thomas Middleton, on "Mining Legislation;" and one by Andrew Roy, the inspector of mines for the State, on the "Causes of Horsebacks in Mines." All the papers were discussed at length. The paper by Prof. Orton was one of surpassing interest, and elicited approving criticism. The other papers were by practical engineers, and were replete with valuable practical truth to the profession. They will each be published in the official organ of the Institute—the *Trade Review*, of Cleveland.

At Longstreth's mines, on Monday Creek, the Lechner machines were used for mining. These mines were visited by a number of engineers from the northern and southern portions of the coal field on Friday evening, but too late to see the machines at work. The Harrison and Lechner machines being used in adjoining mines in the valley, each machine has its special advocates, but the engineers seemed more favorably impressed with the Lechner than the Harrison. At the same time the visitors admitted that in many coal regions favorably located as to conditions these "iron miners" must be considered a success. Their long use in the mines of the valley is a proof of their adaptability to this coal region, and they seem to be gradully but surely finding their way to all the great coal producing regions of the United States. The Harrison machine is higher than the Lechner, the former weighing 800 pounds the latter 1,500 pounds. The Lechner cutter is a horizontal bar with inserted knives, which cut a groove 4 in. in height 5 ft. in depth and 3 ft. in width in the bottom of the coal. The Harrison cutter is a circular piston, on the end of which a pick point is inserted; the stroke is about 9 in. in length and is delivered very much as a miner strikes with his pick.

The mines of the valley visited by the engineers were opened on the great vein coal, and were 6 to 7 ft. in height, all level, free, dry, comfortable, well-ventilated and well-managed.

At Straitsville and Shawnee, a few miles distant, the vein is 9 and 10 ft. high—even rising to 11 and 12 ft. occasionally. It is not generally known that this additional height is caused by the union of two beds of coal, but such is the fact. The engineers gave this subject especial attention and satisfied themselves fully as to the facts by ocular demonstration—the best of proof

After the close of the evening meeting on Friday, which was held mainly for the purpose of arranging a programme for the next meeting, the session closed, to meet at the call of the president in Youngstown.

The general officers of the Institute are: President, Andrew Roy, Columbus; Vice-President, Fred Howell, Zanesville; Secretary, R. S. Paul, Akron; Treasurer, John Ackley, Athens.

I did not get the names of the Executive Board. This institute has been but recently organized, the Nelsonville meeting being the first one held in the coal regions of the State. The Association meets three times in each year. The first meeting is held in Columbus in January, and the two other meetings are held in the coal regions at the call of the President. The Institute numbers 35 to 38 members, all mainly practical men in practice as engineers, colliery superintendents, civil and mechanical engineers, and graduates of the School of Mines.

All the members were highly delighted with the meeting and the visit to the mines, and are under obligation to Mr. Thomas Black, the Superintendent of the Akron Iron Co.'s mines, and to Mr. John R. Buchtel, General Manager of the Akron Iron Co., for kindness and courtesies shown them.

VISITING ENGINEER.

NELSONVILLE, O., May 13, 1882.

THE HISTORY AND STATISTICS OF AMERICAN WATER-WORKS.

BY J. JAMES R. CROES, M. AM. SOC. C. E.

Continued from page 143.

CCCVII.—LEOMINSTER.

Leominster, Massachusetts, in lat. 42° 32' N., long. 71° 45' W., on the Nashua River and Monoosnock Brook, is on undulating ground, the eastern portion being a sandy plain and the western hilly. Settled in 1725, it was incorporated in 1740. Water-works were built by the town in 1873, after the plans of Phinehas Ball, C. E., taking the supply from Morse Brook and Haynes Brook, which receive the drainage of about 2 square miles. An impounding reservoir on Haynes Brook is formed by an earth dam, with stone masonry heart wall, 15 ft. high and 698 ft. long. Its capacity is 150,000,000 gallons. The water of Morse Brook is impounded in a reservoir holding 10,000,000 gallons and covering 20 acres. This was constructed before its purchase by the town. The distributing reservoir is formed on the stream by an earth dam, with stone masonry heart wall, 23 ft. high and 304 ft. long. Two 14-in. cast-iron pipes convey the water through the dam from a gate chamber built inside the reservoir. A waste-way of stone masonry, 25 ft. wide, is provided. The earth underneath this was "a clayey quicksand," and caused some trouble and much apprehension for some years. In 1879 the waste-way was rebuilt on good gravel.

Distribution is by cement-lined wrought-iron pipe of from 12 to 2-in. diameter. On March 1, 1882, there were in use 18.16 miles of pipe, with 118 fire hydrants, 111 gates and 652 taps. One meter is in use. The town contributes annually $50 for each of 112 public fire hydrants. Service pipes are of cement-lined wrought iron.

The population in 1880 was 6,000. The consumption is not known.

On Sept. 3, 1881, a stroke of lightning destroyed 675 ft. of main pipe, and in January, 1882, 78 ft. of cast-iron pipe laid across the Nashua River froze and burst.

The cost of the works to March 1, 1882, was:

For construction	$165,576.41
For service pipes	5,397.25
Maintenance	93,578.37
	$268,552.03

The receipts had been $108,007.06; the bonded debt is $160,000, at 7 and 6 per cent. interest; the expenses of maintenance for the year ending March 1, 1882, were $2,688.59, and the receipts from water rates $15,874.79. The works are managed by a board of three commissioners, one being elected annually. The Superintendent is chosen annually by the board. C. H. Merriam is Chairman of the board, and Joseph G. Tenney the Treasurer and Superintendent.

CCCVIII.—BELLOWS FALLS.

Bellows Falls, Vermont, in lat. 43° 8' N., long. 72° 26' W., is on the Connecticut River, at a point where there is a considerable fall in the stream, affording valuable water-power. Mt. Kilburn is on the east side of the river and a range of hills on the west.

It was incorporated as a village in 1833.

Water-works were built by the village in 1848, taking the supply from Minard's Pond, a natural basin of 75 acres area, fed by springs, and with no stream entering or flowing from it. It is 300 ft. above the village, to which the water is distributed from the pond by cast-iron pipes of 8, 6, 4 and 2-in. diameter. There are 6 miles in use, with 40 fire hydrants, 15 gates, 500 taps and 12 meters. The village pays $1,000 per year towards the support of the works. Lead and iron service pipe are used.

The population in 1880 was 2,228. The daily consumption is not known.

The works cost $60,000. There is a bonded debt of $47,700 at 6 and 5 per cent. interest.

The expenses in 1880 were $1,000.78 and the receipts $4,125.16.

The works are managed by three commissioners. F. H. Brown is the Superintendent.

CCCIX.—DANSVILLE.

Dansville, New York, in lat. 42° 33' N., long. 77° 47' W., is in a valley with hills on three sides, on Mill Creek, which has a water-shed of about 10 square miles. Settled about 1795, it was incorporated as a village in 1845.

Water-works were built by the village in 1874 for fire protection only, after plans of D. M. Greene, C. E.

The water is taken from a well in a mill dam on Mill Creek, about 190 ft. above the village, and conducted 2 miles in a 10-in. pipe of wooden staves banded with iron and coated with asphalt. The branches are of 6 and 4-in. pipe. Four miles in all are in use, with 40 fire hydrants and 9 gates. When the works were first tested, 7 hydrants were opened, and on this being simultaneously closed, a number of breaks occurred in the pipes. Several breaks have also occurred from careless workmanship in the grading of the branches and the laying of the pipes, but they are now reported in good condition. It is contemplated to build a reservoir shortly.

The works have cost $24,800. The bonded debt is now $10,000, at 7 per cent. interest.

No further financial statements are given.

J. H. Robbins is the Superintendent.

CCCX.—DOWNINGTOWN.

Downingtown, Pennsylvania, in lat. 40° 0' N. long. 75° 38' W., is in Chester Valley, a long, narrow valley extending through Chester County.

Water-works were built by a private company in 1874, taking the supply from mountain streams and conducting it by gravity to the borough and distributing it through 7 miles of 6, 4 and 3-in. cast-iron pipe, with 1 fire hydrant and 200 taps.

The population in 1880 was 1,554. The capital stock of the company is $50,000. The works have cost $54,000. The bonded debt is $4,000, at 7 per cent. interest. No other data are furnished.

James B. Sirves is President of the company.

[TO BE CONTINUED.]

ACKNOWLEDGMENTS.—The receipt of statistics as follows is acknowledged with thanks:

From F. H. Brown, Superintendent, statistics and water rates of the water-works of Bellows

Falls, Vt. From J. W. Robbins, Superintendent, statistics of the water-works of Dansville, N. Y. From C. H. Merriam, Chairman Water Board, statistics and water rates and set of reports of the water-works of Leominster, Mass.

CORRECTION.—April 15, 1882, p. 123. *Moline.* The daily consumption was given in cubic feet by mistake. In 1880 it was 90,000 gallons and is now 188,000 gallons.

CORRESPONDENCE.

STRAW PLANKS.

BALTIMORE, May 13, 1882.

EDITOR ENGINEERING NEWS:

DEAR SIR: A friend of mine, writing from Africa, asks where he can learn something about planks made of straw, of which he has seen notices. I have made inquiries in various quarters, but can as yet learn nothing definite on the subject. I will be much obliged if, from your commanding position at the center of engineering news, you will enlighten me.

Respectfully and truly, W. P. C.

[We hope some one of our readers will furnish the above information as soon as possible.—EDITOR ENGINEERING NEWS].

RICHMOND, Va., May 17.

TIMBER ROOFS.

EDITOR ENGINEERING NEWS:

Will some of your readers give the most approved joint for a principal and the tie beam in timber roofs of large span timber, not well-seasoned pine? The tie beam is not to project outside of the wall which supports it.

I do not find any very good arrangement in the books on carpentry, of which I possess, I believe, the usual variety. SUBSCRIBER.

TABLE FOR ANGLES IN PLATE GIRDERS.

NEW YORK, May 13, 1882.

EDITOR ENGINEERING NEWS:

Can any of the readers of your esteemed paper furnish the undersigned with a table for computing rapidly the net and gross sections of angles used in proportioning plate girders, riveted structures, etc.? J. D. F., C. E.

LOCK-GATE IMPROVEMENT.

NEW YORK, May 18, 1882.

EDITOR ENGINEERING NEWS:

Mr. Wierman, Chief Engineer of Pennsylvania Canal Company, applies to us for information as to "Samuel T. Seely's gate improvement" for canal gates. He has a number in use (put in years ago) and wishes to order more. They were formerly made by Peake & McCarthy, Advance Iron Works, of this city. Can you procure us any information on the subject?

GEO. F. BLAKE MANUFACTURING CO.

[We have no doubt some of our readers can give the desired information. We hope they will do so at earliest convenience.—ED. ENG. NEWS.]

NYE STEAM VACUUM PUMP.

76 BANK STREET, NORFOLK, Va.
May 8, 1882.

EDITOR ENGINEERING NEWS:

In the last number of ENGINEERING NEWS, page 3, I observe a note on the sinking of a caisson for the "Lake Water-works," by Messrs. C. J. & W. T. Bates, using a "Nye steam vacuum pump" for removing sand.

I have for some time been looking for such a pump to remove sand and water together in the sewerage works of this city. Can you inform me further about this pump, and where I can get it.

The note in ENGINEERING NEWS does not state at what city or lake the "Lake Water-works" are, or I would not have subjected you to the inconvenience of answering my inquiry, but would have written to the water-works company.

Your courtesy will oblige

WM. HENRY BALDWIN,
Asst. Engineer Norfolk Sewerage Dept.

[The Messrs. Bates, whose address is 149 La Salle street, Chicago, probably referred to the town of Lake, Cook County, Ill. The Superintendent of Water-works of that town is Jacob T. Foster, C. E., and his address is "Stock Yards," Chicago, Ill.—ED. ENG. NEWS.]

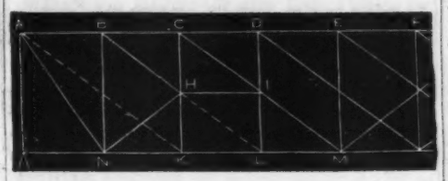
REPLACING CHORD BARS.

COUNCIL BLUFFS, May 15, 1882.

EDITOR ENGINEERING NEWS:

Possibly my statement in the NEWS of May 5 of the problem for replacing chord bars was not as plain as it should have been.

The tie bar *CM* is continuous and has no connection with any member except at each end.



The strain in *DI* must be transferred to the ties *HI* and *IE*, the tie *BHIE* passes under the feet of temporary posts along *CH* and *DI*.

Mr. Rudiger's solution is right assuming the post *DL* and tie *CM* to be connected at *I*, but it would be very difficult to make such connection.

Would be glad to hear from Mr. Rudiger again.

CHAS. F. LOWETH, Assistant Engineer.

RAILROADING ON THE PACIFIC SLOPE.

E. G. Tilton, of Yale, B. C., contractor, chief engineer and general superintendent of the Pacific end of the Canadian Pacific R., in an interview with an *Oregonian* reporter, gave the following information concerning that enterprise: Last February a contract for building 85 miles from Emory Point, 5 miles below Yale, to Port Moody, the western terminus, at the head of Burrard inlet, was let to Andrew Onderdonk and associates, and the work of clearing and bridging is already under way. Grading will be commenced about the 25th of this month. Arrangements have been made for the importation of 8,000 Chinese, to arrive within 60 days. Two vessels, with 1,200 coolies, arrived last month, and the men are now at work. Five thousand men will be put on the line between Emory and Port Moody, and a like number on the Frazer River. The work thus far on the Frazer has resulted in the completion of 23 miles of track, under a contract secured in 1880, northeast from Emory. Upon these 23 miles 1,000 men have been at work for 18 months, and the grade from the 60th to the 90th mile is nearly completed. The work from Emory to Thompson's River, a distance of 60 miles, is probably the most difficult and expensive on the North American continent. Frazer River is bordered with steep, rugged mountains of solid granite, from 5,000 to 8,000 ft. high. In the first 17 miles there are 18 tunnels—four in one mile and six in another. In 2 miles on the division above Emory there are no less than 600 trestles and bridges, and in the last 85 miles more than 100 embankments, which at the foundation level are 17 ft. wide, and the cuts 22 ft. The tunnels are 22 ft. wide and 21 ft. high. None other than 58-pound steel rails are used. In the upper section of the work there are 10,000,000 cubic yards of earth, and excavation of 3,000,000 cubic yards of rock, exclusive of the tunnel, and 2,000,000 cubic yards of rock and cemented gravel. Between 30,000,000 and 40,000,000 ft. of timber, board measure, are required for the structures. Over the entire contracts the rock is of the hardest compact granite, in which often occur wide and extremely rich quartz veins. For miles the road is literally hewn out of the side of the cliffs. The approaches to many of the tunnels are galleries. At the eastern approach is tunnel No 7, for over 100 ft., the bluff is galleried, and overhangs the roadway 24 ft. in width, or 2 ft. outside the road-bed, below which is an almost perpendicular precipice of 200 ft. The first tunnel is at the north end of Yale, and the first four happen within a mile and a half of the town. It required eighteen months to build the first 2 miles, working in the tunnel night and day. From one point six tunnels are visible at a glance. The grades and curves are moderate, the heaviest grade being 50 ft. to the mile. The line follows the west bank of Frazer River to a point 8 miles below Lytton, where Thompson's River empties into the Frazer. There the latter river will be crossed by an iron and steel bridge, to cost $300,000. The line will then follow the south bank of Thompson's River to Kamloops Lake. The contractors expect to have completed by the end of this year 130 miles of grade, and have 50 miles of track in operation. The first 2 miles north from Emory cost a trifle over $200,000 per mile, and the 11 miles from the eighteenth to the twenty-ninth, cost $175,000 per mile. The average cost per mile of the upper division along the Frazer and Thompson's rivers will be over $75,000 per mile. This does not include the cost of rails and fastenings, which are furnished by the government. The cost of the 212 miles from Port Moody to Kamloops Lake will be, exclusive of rails, $12,000,000. The company have at Yale erected nitro-glycerine and powder works, with a capacity of 11,000 pounds per day, and car and machine shops, and all the supply departments. A steamer is under construction, and will be launched in a few days, for the navigation of the upper Frazer between Boston Bar and the mouth of Thompson's River. The boat is intended for the transportation of supplies, and will be the first to ascend above Boston Bar.

STREET PAVING SPECIFICATIONS.

The grade shall be as follows, to-wit: Beginning on the south side of New York street with zero and numbering consecutively to the north curb line of St. Clair street, between station zero and 5 plus 38.5, and ascending grade two feet to the thousand feet; between station 5 plus 38.5 and 15, a descending grade of one and one-half feet to the thousand feet; between station 15 and 16, level; between station 16 and 24 plus 73 (being the north curb line of St. Clair street), an ascending grade of one foot and six-tenths to the one thousand feet.

A station is one hundred feet. The cedar blocks shall be laid on the grade herein set out; the blocks shall be of good, sound, live timber, free from bark, loose or rotten knots, or other defects, and shall be six inches in length, and from four to eight inches in diameter, ends to be sawed at right angle to the axis of the blocks; blocks must be placed on end in a close, compact manner, care being taken to so arrange the larger and smaller blocks together that the interstices shall be left as small as possible, and that no square holes will be found. All blocks adjoining the curb to be split and the flat side placed next the curb, so as to make tight and even joints, each block to rest squarely upon the base without binding. Whenever any blocks are found loose, or with knots or bark on them, or any defective blocks, all the pavement afterwards laid shall be taken up and properly relaid at the expense of the contractor. After the blocks are properly laid they shall be rammed with a heavy rammer nine inches in diameter and flat at the base, and all the blocks brought to a smooth, level surface. The spaces between the blocks to be filled with clean, dry, screened river gravel, of a size from one-quarter of an inch to three-quarters of an inch in diameter, the proportion of said gravel to be such as to completely fill the interstices. The gravel in said interstices shall be rammed with steel-pointed bars of such shape and size as to enter all interstices freely. After the gravel shall be thus pounded down from one and a half to two inches, the spaces shall be again filled with the same kind of gravel and again rammed as before. Hot composition, not less than one and a fourth gallons per square yard, shall then be poured over the entire surface of the blocks, composition to be equal to Barrett & Arnold's best paving composition, distilled at four hundred (400°) degrees Fahrenheit, and used sufficiently hot to give it proper body; after which clean, dry, screened river gravel, about the size of peas, shall be spread over the street in sufficient quantity, so that, when swept, all interstices between the blocks will be thoroughly filled. After this latter coat of gravel is well broomed in, the whole surface of the street shall be again covered with hot composition, not less than three-quarters of a gallon per square yard, and immediately covered with roofing gravel screened from that used to fill the spaces between the blocks; said covering to be not less than one-half inch in depth.

All the cross-walks shall be made level with the center of the street, and the sides to a level with the curb; the intersections of all cross streets and alleys to be paved with cedar blocks to the regular width of the roadway, and the wings of all said intersections to be graded and bowldered according to stakes of the City Civil Engineer. The bowlders shall be placed on enough bank sand to make the surface of bowlders fifteen inches above the sub-grade; all bowlders to be set on end as firmly and as compactly together as it is possible to set them, and to range in size from four to six inches in longest diameter.

Double stone crossings to be put down with the bowldering, and to be raised from two to three inches above the bowlders; stone to be of the best quality of limestone, not less than four feet in length, fifteen inches wide and six inches thick, and to be placed in parallel rows eighteen inches apart. All of said work shall be done according to plans and specifications on file in the office of the City Civil Engineer, Indianapolis.

ENGINEERING NEWS
AND
AMERICAN CONTRACT JOURNAL.

GEO. H. FROST.....PROPRIETOR.

Tribune Building, New York City.

JULIUS W. ADAMS, *Past President A. S. C. E.*, EDITOR.

S. D. V. BURR. .....ASSOCIATE EDITOR.

SATURDAY, MAY 20, 1882.

EDITORIAL ANNOUNCEMENTS.

Terms of Subscription.—To the United States and Canada, $4 per annum, including postage; all parts of Europe, $5, payable in advance. Remittances at the risk of the subscriber, unless made by registered letter or by draft, check or P. O. order, payable to GEO. H. FROST.

Terms of Advertising.—One inch, 12 lines, one insertion, $2; one month, $6.50; three months, $17; six months, $30; one year, $50. Special rate for large space and long time will be given on application. Advertisements inserted for less than three months, payable in advance; for longer time, payable quarterly.

Articles for Publication in the current number should be received at the office of publication not later than Thursday morning, and advertisements not later than Friday noon.

Correspondence upon subjects which naturally belongs to the province of this journal is solicited.

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WE wish to secure as full a record as possible of all new contract lettings; will readers of this journal please to assist us as far as they are able. Will they also send us the results of such lettings as they may have access to; the comparisonof bids is very valuable to contractors in making up future bids on work.

WE call the attention of city engineers, railway engineers, and all other parties having control of contract lettings, to the superior advantages of advertising their proposals in this journal. We claim—without fear of refutation—that it is the special organ, most widely read, of engineers and contractors, in this country, and it is also the *cheapest* medium for advertising proposals. The rate is *ten cents per line*, each insertion, and for all classes of engineering work it is superior even to the most widely circulated dailies, as it goes direct to the leading contractors of the country, men who are ready for any work, from building a culvert to a transcontinental railway. Try advertising as we advise and test the results.

OUR NEW NAME.

Contracting intelligence has constituted so large and important a department of this journal that we hardly consider an explanation of our enlarged title necessary. It is done for the purpose of more fully advertising the real scope of our publication, and thus enlisting as subscribers and advertisers a very large class who look for such a journal as ours, but do not recognize its applicability to their wants by its hitherto appellation. Engineering and contracting go hand-in-hand the world over, each depending very much on the other for success, and it is eminently fitting that the same journal should cater to the business wants of both. We recognize more fully, as we grow older, that engineers and contractors are very much like other men, in that they are always ready to hear of some "new thing"—and he who can tell them a great many new things *every week* cannot fail to add very materially to the sum total of their individual satisfaction. It will not *pay* for any one journal to undertake to publish all the engineering and contracting intelligence of this continent and, at the same time, undertake to give its readers lengthy papers on engineering, which now more than occupy the columns of several good-sized journals. So it is that we prefer to deal with the curious, news-seeking, "sordid" side of our constituency, and if we can assist them in securing profitable situations or "fat" contracts, we are very willing to let our esteemed contemporary in Murray street, or our Western brother, delight their readers with the mysteries of calculus and other recreations of the intellectually inclined. We propose to give the *news* as fully as we can, and at the same time contribute as much as possible to the intellectual "hankerings" of our patrons. We are very much gratified with our present list of readers, but we confidently expect to see the list very much increased during the present season. The plethoric condition of the National Treasury ought to make glad the hearts of untold numbers of contractors, however much the individual taxpayer may deplore the necessity for "improving" all the mountain streams of the continent, or erecting first-class post-offices in numerous Podunks, which our benevolent law-makers are so diligently log-rolling about at the National Capital, and it is to facilitate the research of numerous seekers after profitable contracts that we are preparing for the summer campaign that will in a few days be at its best. The government proposes to spend on its rivers and harbors nearly twenty millions of dollars, and probably as much more on buildings; how much on all manner of supplies, we do not know. Then there are innumerable private and municipal contracts always being advertised. As far as diligence and industry can obtain knowledge of these lettings, we propose to have them each week. It is a laborious task; but if we are well paid for it, as we expect to be, we will not complain, and the convenience and economy to our patrons in finding this class of news easily and cheaply is only too apparent. They may well congratulate themselves that it is our head and not theirs that does the aching over the several hundred daily and weekly newspapers that must be examined each week for the news of a continent, and we feel assured that they will look upon the subscription price of this journal as a very satisfactory investment.

BUILDING, MATERIAL AND WAGES.

The total estimated value of the structures for which the Bureau of Buildings of this city granted permits during the first three months of the present year is $10,982,600. This aggregate represents 924 new structures, whose cost, as calculated by the architects and builders, will be $9,617,600, and alterations to existing buildings to cost $1,153,000. For the same period the city of Brooklyn granted permits for 383 buildings, having an estimated cost of $1,458,000, with alterations to existing buildings to cost $183,000. These records indicate a continuance of the unexampled activity in building that marked the year 1881, which was unprecedented in regard to the money value of the operations, and was an increase in the number of buildings over that of any previous year except 1871.

These causes produced a great demand for all building materials during last January, February and March, and as real estate seemed to be booming this demand was considered healthy. Taking advantage of this the prices advanced; skilled labor reached figures it had not touched for years; common labor was remunerated at far more than its real value. Brick, the most essential item in estimating for contracts in this city, brought high prices, and the market seemed to be firm and steady.

Proving again the law of demand and supply, the high prices induced large shipments, and all who had bricks profited by the rise and threw them on the market. An unwonted activity was induced at all the manufacturing points along the North River—whence New York obtains most of its common bricks—and as a natural consequence there was soon a supply far in excess of the demand. The facts that the market was overstocked and that most of the heavy contracts had been let, produced a reduction, during the latter part of last week in the price of North River Hards of about $3 per thousand, or from $11@$11.25 to $8@$8.25. These figures now seem steady, and although low in comparison to those recently prevailing, yield a fair profit to both manufacturer and dealer. The fall has affected nothing else in the building line, and prices remain firm.

These prices, if continued, as they in all probability will be, considering the present stock and the season, may produce an increased amount of building during the summer and fall. When low prices are ruling and money is plenty, as at the present time, builders and owners take advantage of the state of affairs, and do as much business in as short a time as possible. Moreover, the prosperous condition of the country makes improved real estate of any kind valuable beyond what it is intrinsically.

But before operations assume extensive proportions the question of wages will be considered, and if the rates are excessive nothing of any magnitude will be inaugurated, even though the prices of building materials fall to the lowest figures. It is in cases such as this when the artizan and laborer practically control the use of capital, and it depends upon them whether that capital will remain idle or be productive. Masons in this city are now getting from $4.00 to $4.50 and hod carriers from $2.00 to $2.50. Should operations cease for a short time these rates would be reduced, as the law of demand and supply is as applicable in this instance to men as it was previously to bricks, trade unions to the contrary notwithstanding. A combination of low prices for bricks and low wages for men would be apt to induce extensive building movements during the latter part of summer and fall.

THE AMERICAN IRON AND STEEL TRADE.

There is a sluggishness in the demand for railroad material which indicates an uncertainty among railroad managers as to what course to pursue. A few months ago mills were overwhelmed with orders and inquiries, some of which had reference to deliveries twelve months ahead. At present orders are slim and irregular. Prices have weakened until quotations cannot be given with certainty. The lowest sale for three years was made at a Pennsylvania mill a few days ago at $47.50. Rail makers quote prices at $50 to $53. Capacity is being extended in an increase of six converters from thirty-one to thirty-seven, which will afford facilities for almost any demand which may be expected for years to come. The future of railway construction depends much on the magnitude of crops and the volume of export trade. The export trade depends, of course, on the relative prices of American and European competing products. Railroad and iron and steel manufacturing interests are studying the economic problems of the near future with deeper interest than statesmen are supposed to give to such subjects. A vast volume of capital awaits investment in railroad schemes. It is not out of the way to say that a sharp renewal in railroad construction will follow abundant crops and a strong export trade. For the present conservative counsels will prevail until a more encouraging condition of trade attracts heavier investments. Imports of iron and steel continue large, though no serious effects are shown on American production or market quotations. The foreign markets are quite active, though prices are weakening according to latest cables.

The American iron trade is only holding its own

between an advancing tendency in the cost of labor and a declining demand. New enterprises are not being hastened forward with the same vigor which was exhibited last fall. Even at minimum limits, the consumptive demand is very fair. The fact that with consumption restricted to within the narrowest limits possible prices do not weaken more than they do is a favorable feature of the iron trade. Yet the productive capacity is expanding and the increase in output is bound to tell on prices sooner or later. Railroads are buying less than usual, the labor forces in yards, shops and tracks are being curtailed from 14 to 25 per cent. and expenditures generally restricted in order to favor dividends, which have shown up less favorably of late. Yet nearly all mills are fully engaged on double time; one here and there is dropping off. Wages disputes are threatening a restriction of production. Demands have been made for higher wages, and there are indications that the demand will be extended to other sections.

The merchant iron manufacturers have reduced the price of finished iron from 2.8c. in Eastern centres to 2.6c.; in Western Pennsylvania to 2½@2.4c. Competition is at work. Bridge works are generally crowded with orders through the summer. Structural mills have engagements for entire capacity for a like period. Plate iron of all kinds is in sufficiently active demand to keep all mills running on full time; but buyers are not anticipating wants, and hence prices are more in their favor. Tank is three cents in small lots and one to two-tenths less in large lots. Bridge plate, 3@3¼c. Shapes 3@4c. Deliveries can be made more promptly than a few months ago in all except shapes and steel rails. Crude iron is steady and firm according to market reporters. The cost prevents much of a concession. Production is equal to demand, but very little if any more than equal. Bessemer is arriving in occasional lots at $23@$24. Domestic supply is increasing, but the high prices of lake ores prevent lower rates than now rule.

PERSONAL.

R. H. COUSINS is Chief Engineer of the Sabine & East Texas Railroad.

C. F. STEPHENS is Chief Engineer of the Texas & St. Louis Railroad.

J. H. THOMPSON is Supt. and Engineer of the Wilmington & Northern Railroad.

MR. JOSEPH O. OSGOOD has been appointed Chief Engineer of the California Southern Railroad.

GEORGE JENNINGS, of Lambeth, England, well known in sanitary matters, died recently from the effects of a carriage accident.

OWEN MERIWEATHER, C. E., of Memphis, Tenn., is engineer in charge of constructions of the Natchez, Jackson & Columbus Railroad.

THE resignation of Second Lieutenant Edward O. Brown, of corps of engineers, has been accepted by the President, to take effect the 1st of July.

MR. WILLIAM MCBRIDE, a Water Commissioner and a prominent contractor of Long Island City, N. Y., has absconded, leaving debts, it is alleged, as far as ascertained at present, amounting to $15,000.

MR. S. L. MERCHANT, dealer in Portland, Roman and Keene's cements, has removed his headquarters from No. 41 Broadway to No. 5 Bowling Green, this city.

THE general offices of the North River Construction Company and the New York, West Shore & Buffalo Railway Company have been removed to 15 Broad street, Mills Building, New York City.

JAMES G. KANEY is Chief Engineer, and Prof. CHAS. S. GREENE, of Ann Arbor, is Consulting Engineer of the Wheeling and Lake Erie R. R. Bridge Co.; office, room 34 Hartford Block, Toledo, O.

The firm of DARRAGH & HAVILAND, of Columbus, O., contractors for the Minneapolis viaduct, has been dissolved by E. Darragh buying his partner's interest. Mr. Darragh continues the contract on the viaduct. His address is 47 Sixth avenue, S. E., Minneapolis, Minn.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—At the regular meeting on May 3 the following were chosen members: Wm. G. Curtis, San Francisco; Edward C. Kinney, Des Moines, Ia.; Gustav Lindenthal, Pittsburgh, Pa.; Thomas C. McCollom, U. S. N., New London, Conn.; David Reeves (transferred), Philadelphia.

C. D. W. YOUNG, auditor of the Chicago, St. Paul & Omaha Railroad and one of the newly elected directors of the Minneapolis and St. Louis railroad, STEWART MOORE, chief clerk in the freight office of the Northern Pacific Railroad, both of St. Paul, and C. C. GOSSACK, of Shakopee, were drowned in White Bear Lake, Minn. last week.

MR. ALBERT FINK has been tended the presidency of the Louisville & Nashville Railroad Company. The offer was made unconditionally, and is now being considered unconditionally. The presidency of the company has been offered to no one besides Mr. Fink. The company desires to retain him because he was connected with the road from its inception as civil engineer, and he worked his way up to vice-president. Mr. Fink has as yet made no answer.

SIMON FRAZIER fought in the war of 1812, drifted ashore on a single timber from his raft, which the St. Lawrence rapids had knocked to pieces, was blown fifteen feet into the air by the premature discharge of a blast, assisted in a boiler explosion on the Hudson, was brought home half dead from three other accidents, of which the particulars have not been preserved, twice recovered from illness after his doctors had given him up, and finally died in peace at Troy, N. Y., Tuesday evening the 9th, in the Home for the Aged, at the age of 105 years.

ENGINEER CORPS MEXICAN CENTRAL.—We have received from reliable sources the following addition to the Engineering Staff published April 29: S. C. Slade, Material Agent; F. M. Bisbie, Superintendent Track; Wm. Humphrey, Superintendent Bridges and Buildings; J. H. Laudon, Master Mechanic; J. W. Webster, Fuel Agent. Ex-Governor G. T. Anthony, of Kansas, is the General Superintendent. George H. Anthony is the Acting Superintendent of Transportation and Telegraph. Señor Don Bonito Leon Acosta, of the City of Mexico, is "Inspector del Gobierno," or Government Engineer.

MR. H. H. WARNER, of Rochester, offers the following astronomical prizes for the present year: Two hundred dollars in gold for each discovery of a new comet made (the discovery, not the comet) in the United States, Canada, Great Britain or Ireland; $200 for any meteoric stone found in any of the above countries during 1882, which Professor Henry A. Ward, of Rochester, N. Y., Principal Dawson, of Montreal, Canada, and J. Lawrence Smith, of Louisville, Ky., shall unanimously decide contains fossil remains of animal or vegetable life, thus proving the inhabitability of other planets; the sum of $50 for a specimen of any meteoric stone (whether it contains organic remains or not) seen to fall in the United States during 1882.

A RECENT APPOINTMENT.—U. S. COUNSUL AND COMMERCIAL AGENT, MORRISBURG, Canada May 2, 1882.—i was There last sundy and Left mundy to Return. i Can not Be absent but a Short time At present. Until i Have my Assistant and deputys Properly arranged. i should Have Been pleased To have Met you on Return i find yur kind Letters and Paper Sent With Thanks. Please keep On sending me the press its Complements are Murthful My Office Is one Of the Highest in the consul service of The U. S. and Entirely satisfactory how pleased i will Be to Receive you here go sailing on the river st. lawrence and Haul in the Fish by the Bushel Give my Regards to the press But especially to Francis and the Times and believe Me Evers Yor Friend A. B. ELLIOTT, late editor of the *Lansing (N. Y.) Gazette.*

ARTHUR HAVILAND, C. E., and Sandford Horton, C. E., Assistant Engineers Tehuantepec Railroad, returned on Thursday morning by the steamer City of Washington. Mr. Haviland went to Tehuantepec two and a half years ago. Since then 106 kilometers (65 miles) have been located. The estimated distance across the isthmus is about 150 miles. *No continuous preliminary line has been surveyed.* There are now two parties engaged in location surveys and two construction camps, the further of which is 40 miles from the gulf. There are on hand iron and ties for one-half proposed line; also, three locomotives and fifty flat and box cars. Laborers are exclusively natives, and are paid $1 to $1.25 per day, being about three times as much as is paid to the same class of laborers on the Central and National roads. The mahogany cutting trade draws to it all the labor of the country; hence the high prices. There is absolutely no call for engineers; carpenters and machinists are in demand; $4 per day to carpenters. The country is decidedly *tierra caliente*, and very wet, a slight summer shower rendering the roads almost impassable. The rainy season is from June to December inclusive; the rest of the year, especially April and May, is hot and dry. Mr. A. G. Bradstreet is at present acting Chief Engineer, Mr. Martin Van Broecklin, the late Chief (formerly of the N. Y. Elevated Railroad) having resigned last November.

MAJ. GARRETT J. LYDECKER, the Engineer Commissioner of the District of Columbia, succeeding the late Major Twining, is a native of New Jersey, and was selected for appointment to a military cadetship by competitive examination of pupils from the free schools of New York. He was at West Point from September, 1860, to June 13, 1864, when he was graduated and promoted to first lieutenant, corps of engineers. During the rebellion he served at the siege of Petersburg in the Army of the Potomac, being in command of a company of the engineer battalion. He was brevetted captain April 2, 1865, for gallant and meritorious services at that siege; also, as assistant engineer in making surveys at the theatre of military operations before Petersburg from April 13 to June 15, 1865, and while acting as assistant to the board of engineers for the melioration of the fortifications in the vicinity of New York, he was promoted to be captain. He served as an assistant engineer on Fort Wayne, Michigan, and harbor improvements on lakes Erie and Huron from April, 1867, to November, 1868, and on the works in charge of Major Prime from November, 1868, to April, 1869; as superintendent engineer of the defenses of New Orleans, the survey of Galveston Harbor, Texas, the 8th lighthouse district, west of Pearl River, from April to July, 1869; he served as assistant professor of engineering at the West Point military academy from August 28, 1869, to February 15, 1871, and as principal assistant professor until August 15, 1872; as chief engineer on the staff of the commanding general of the division of the Pacific from September 8, 1872, to February 5, 1874; as assistant engineer on the works in charge of Major Housten, from February 24, 1875, to May 3, 1877, and as chief engineer of the division of the Missouri until July 16, 1878, performing the duties of superintending engineer of improvements of the harbor of Michigan City, of the new Buffalo Harbor, of the Chicago and Calumet harbors, and of the Illinois River. He was a member of the board of officers to examine candidates for the position of second lieutenant in the the army in 1873, and was also a member of the board of engineers on the improvement of the Chicago and Michigan City harbors in 1878. He was stationed at Chicago continuously from January 1, 1878, as chief engineer officer at the headquarters of the military division of the Missouri. He was detached from duty as chief engineer officer July 12, 1878, and since that date has been in charge of improvements of harbors, particularly the Chicago harbor. He was promoted to be Major March 31, 1880. He possesses fine executive ability, is energetic, of sterling integrity of character, a thorough engineer, and stood among the first in his class at West Point. His detail to Washington is

regarded with much favor by his former classmates, who speak in the highest terms of praise of him as an officer and a gentlemen.

OBITUARY.

BREVET MAJOR-GENERAL JOHN GROSS BARNARD, Corps of Engineers, U. S. A., died in Detroit on the 14th. He had been an invalid for some time. His remains were taken to his late home in Sheffield, Mass.

General Barnard was a brother of President Barnard, of Columbia College, and was born at Sheffield, Mass., May 19, 1815. He was graduated at the military academy in 1833, and entered the corps of engineers as a Brevet Second Lieutenant. In 1835 he was sent South, and for several years he was stationed near Pensacola and New Orleans. He reached the rank of Captain in 1838. He served in the field during the Mexican war, and was rewarded with the rank of Brevet Major. In 1858 he was made a Major. In 1850 General Barnard served as a member of the Tehuantepec Survey Commission, assisting in the preparation of the first full report to the government concerning the Isthmus. In 1854 he was in charge of the construction of the fortifications at San Francisco, and in 1855-'56 he was superintendent of the military academy. From 1856 to 1861 he was in charge of the fortifications of New York harbor. He entered the field early in 1861, being present at the first battle of Bull Run as Chief Engineer on General McDowell's staff. In the same year he was made a Brigadier General of Volunteers. General Barnard directed the siege operations of the Army of the Potomac during the Peninsular campaign, and was afterward placed in charge of the defenses of Washington. In 1864-'65 he served with General Grant as Chief Engineer of the armies in the field, and was present at the surrender of General Lee. He was made a Brevet Colonel in the regular army in 1862, Lieutenant Colonel of Engineers in 1863, Brevet Major General of Volunteers in 1864, and Brevet Major General in the regular army and Colonel of Engineers in 1865. After the war General Barnard served as senior member of the Board of Engineers and as a member of the Lighthouse Board. He was placed on the retired list in January, 1881. General Barnard was a member and original corporator of the National Academy of Sciences, and was an active member of several other scientific societies. He received the degree of A. M. from the University of Alabama in 1838 and the degree of LL. D. from Yale College in 1864. General Barnard was a contributor to many standard publications and one of the associate editors of Johnson's Cyclopædia. Among his principal publications are the following: "The Phenomena of the Gyroscope Analytically Examined" (1858); "Notes on Seacoast Defense" (1861); "Reports of the Engineer and Artillery Operations of the Army of the Potomac" (1863), in conjunction with General W. F. Barry, Chief of Artillery; "Report on the Defenses of Washington (1871); "Report on the Fabrication of Iron for Defensive Purposes" (1871), made in conjunction with General H. G. Wright and Colonel P. S. Michie; "The North Sea Canal of Holland and Improvement of Navigation from Rotterdam to the Sea;" "Problems of Rotary Motion Presented by the Gyroscope, the Procession of the Equinoxes and the Pendulum" (1872). In 1864 General Barnard was nominated to be Brigadier General and Chief of Engineers, but the nomination was withdrawn at his own request.

UNIFORM TIME.

In order to secure a uniform system of time-reckoning throughout the civilized world, Representative Flower, of New York, has introduced a joint resolution, in which the President of the United States is authorized to extend to the governments of all nations in diplomatic relations with our own an invitation to appoint delegates to meet those delegates representing the United States in Washington, at such time as the President may designate, for the purpose of fixing upon a meridian proper, to be employed as a common zero of longitude and standard of time-reckoning.

RAILROADING IN EGYPT.

One of the most magnificent of the late Khedive Ismail's projects, the Nubian & Soudan Railway, is now assuming something like a substantial form. The original idea seems only to have been to run a line from Assouan, below the First Cataract, to Wady Halfa, at the Second Cataract, thus saving the transport of merchandise either way from Nile boat to camel or vice versa, which at present takes place at both rapids. But already an extension 300 miles above Wady Halfa is contemplated by the scheme, and if that is carried out, in all probability the line will be lengthened some day to Khartoum, the capital of the Soudan, at the junction of the Blue and White Nile. "To some," says the London *Globe*, "this may seem a chimerical project, but there are few engineering difficulties in the way save at the Assouan end, which have been already pretty well overcome, and if it is ever carried to completion it cannot fail to affect most propitiously the future both of Nubia and the Soudan. It is to be a single line, of which at present seventy-five miles are finished, and as it leaves Assouan, it passes through a portion of the famous granite quarries out of which the Gizeh pyramids, near Cairo, and so many other Pharaonic works were made. The engineer, a Scotchman, has no European to assist him, and the ways of his Arab and Nubian laborers are anything but the ways of the English navvy. Nothing will induce them to use a wheelbarrow, and as they work in gangs, with a task-master standing over them, whip in hand, either supporting great masses on their backs or carrying away the débris in baskets, they forcibly recall to mind the habits and customs of the ancient Egyptians as depicted on the sculptures at Thebes and Karnak."—*N. Y. Tribune.*

[There is a variety of misinformation in the paragraph above. The "original idea" is hard to fix, but in '73-'78 the idea was to build the railroad from Wady Halfa to Khartoum, and surveys were made the whole way; studies and estimates for a bridge across the Nile far south of Wady Halfa were made, and in '77 the writer came into Wady Halfa from the south on a train which met him about 30 miles out.

The portion between Assouan and Wady Halfa was and is worked by steamers, and it was intended so to work it, as the navigation of that part of the river is fair. There are about 10 kilometers of railroad around the first cataract from Assouan to Philæ.

The pyramids of Gizeh are of limestone, which was quarried near Cairo, although considerable syenite was used in the passages and interior chambers.

The Khédive's consulting engineer, under whom the surveys and studies for the Soudan Railway were made, was Mr. John Fowler, of London, and the resident engineer who did most that was done until work was stopped was Mr. George Kilgour. Probably no work has been done since the spring of '78.]

RECENT INVENTIONS.

APPARATUS FOR SUSTAINING TELEGRAPH WIRES IN CITIES.

This novel improvement has for its object the conducting of telegraphic wires, or wires for supplying the current to electric lights. A hollow girder containing wires for lighting and working purposes is sustained on a line of posts. On this girder are placed at intervals a series of supporting frames for telegraph and telephone wires. These frames contain each a series of vertically removable notched sections for securing the wires. A railing and platform are provided. A series of electric lamps may be placed upon top of the posts.

LEVER FOR STARTING AND MOVING CARS.

This improved car-moving lever is provided with a clutch on its end having rounded bearing surfaces, adapted to fit on the flange of the car-wheel, so that the clutch will slide freely thereon except when force is applied to the end of the lever.

NOVEL FIRE ESCAPE.

This escape consists of a band of flat webbing having slits formed therein for the insertion of the hands. It is fastened at the upper windows or cornice, and is of length sufficient to reach the street below.

UNDERGROUND CABLE-WAY.

In this improvement a conducting carriage travels within the tunnel on angle-iron ways supported by brackets consisting of double and single curved bars. The carriage is provided with rollers and a downwardly projecting arm, to which is secured a rope by which it is connected to a supplemental carriage. The first-named carriage has a pivoted latch which automatically engages and disengages with a socket in the grip. The supplemental carriage consists of a vertical body provided with a gravity latch to engage and disengage with the grip, and at its ends with V-shaped angle-irons and is adapted to travel in V-shaped angle-iron ways secured to yokes placed at suitable distances apart in the tunnel. This device is designed particularly for turning curves of endless cable-ways.

RAILROAD CHAIR.

The base-plate of this improved chair has a cheek for one side of the rail and an abutment serving as a fulcrum on the other side for a lever-cheek piece, which is strained in position by a wedge between it and the base-plate. The parts are kept in proper relation to each other by ribs and grooves.

RAILWAY RAIL.

The meeting ends of the rail in this improvement interlock by reason of acute angular-beveled projections and shoulders extending to the rail centers, at the said ends. The ends have also central-beveled, longitudinal, vertical faces.

FIRE-ESCAPE.

In this improvement, the crank-arm of the shaft which holds the weighted cable-ladder is held from turning by a notched button, which is connected to a controlling rope, which may be released from any story of the building. Projections on the weighted cable ladder strike alarm bells as the ladder descends.

NOVEL TELEPHONE ALARM.

In this important improvement the arrangement is as follows: At each subscriber's station a branch or ground circuit, normally disconnected from the main line, contains a magnet, which controls a mechanically operated bell. At the several subscribers' stations, *seriatim*, this branch is connected with the main line by a clock-work, which moves synchronously with a transmitting clock at the central office. The transmitter, at starting, sends an impulse to line, starting all the clock-trains, and then at any desired point in its revolution it sends a second impulse, thereby calling up that station, and at that station only, which at that time is connected with main line.

ELEVATED RAILWAY.

This improvement has trussed towers, support continuous cables passing over chairs on said columns with anti-friction rollers, the roadway being suspended from the cables by guys, the supporting towers being braced, and the approaches at corners constituting solid roadways.

F. B. BROCK.

WASHINGTON, D. C.

THE CHICAGO BRICK AND LUMBER MARKET.

The condition of the brick and lumber market just now excites a great deal of uneasiness, though for widely different reasons. There is practically a famine in the common brick trade at present. All the old stock is used up or in the hands of contractors, and new brick exists as yet only in the unmolded clay at the several yards. The strike of the brickmakers is still in full tide, though the manufacturers say, as they did a week ago, that the men will soon go to work at the manufacturers' prices, which are the same as were paid last year. The new brick thus far contracted for are to be had on a basis of about $8 per thousand. Some brick are being made just over the border in Indiana, but these, manufacturers say, cannot be laid down here for less than $11 per thousand. This scarcity is interfering seriously with building operations in this city, as the longer the strike lasts the more inclined are the manufacturers to increase their figures for future delivery. The general opinion among dealers is that one result of the strike, should it end to-day, would be to increase the price of brick to the general consumer 50 cents per thousand for the next three months.

It is daily becoming more apparent that the tension in lumber prices is too great, and that a giving way in many important grades must occur in the near future. The causes leading to this state of things are the extraordinary increase in the receipts since Jan. 1, as compared with last year. This increase, according to the report of the Secretary of the Lumberman's Exchange, was, on the 5th inst., 147,630,000 feet of lumber and 39,074,000 shingles. This gain has been due largely to the early opening of navigation, but a good part of it is attributable to the high prices which have stimulated the manufacturers. Had Muskegon, where strikes have prevailed for some time, contributed her usual quota, the increase at the present time over the receipts of last year would not have varied much from 200,000,000 feet. Sales on the cargo market are being made with more difficulty, and prices of everything outside of shingles and lath have a decidedly unstable floating.

Mention has already been made of the large quantities of lumber that were sold during the winter to arrive at prices above those ruling at the close of navigation last Fall. Several parties holding these contracts, not satisfied with the outlook, are selling the cargoes as they arrive at the Franklin street dock rather than take the risk of incurring loss by piling them in their yards. A movement is on foot among the trade looking to a revision of the yard price-list, the revision to be entirely on the side of reduction.

IRON AND METAL EXCHANGE.

The New York Iron and Metal Exchange Company was formally opened on the 16th at No. 69 Wall street, speech making and feasting continuing from noon until late in the afternoon. It is an incorporated company, and among its stockholders are the Thomas Iron Company, B. F. Judson, Naylor & Co., James R. Thompson & Co., the Burden Iron Company, Crocker Brothers, J. B. & J. M. Cornell, Port Henry Iron Ore Company, Cooper, Hewitt & Co., David Thomson & Co., National Tube Works Company, Manhattan Iron Works Company, William H. Wallace & Co., Catasauqua Manufacturing Company, Witherbees, Sherman & Co., Thomas J. Pope & Brother, Edward Bech & Co., the Joliet Steel Company, the Albany & Rensselaer Iron and Steel Company, George A. Evans, E. S. Wheeler & Co., Abraham S. Patterson, O. E. Schmidt & Co., James Williamson & Co., the Lackawanna Iron and Coal Company, and Phelps, Dodge & Co. The opening exercises yesterday were under the superintendence of the company's Board of Directors, consisting of James B. Brinsmade, of Edward Bech & Co.; Edwin F. Bedell, of Cooper, Hewitt & Co.; Frederick L. Lehmann, of Naylor & Co.; Thomas J. Pope, of Thomas J. Pope & Brother; Benjamin G. Clarke, of the Thomas Iron Company; E. S. Wheeler, of E. S. Wheeler & Co.; William H. Wallace, of William H. Wallace & Co.; John B. Cornell, of J. B. & J. M. Cornell; and Chester Griswold, of the Albany and Rensselaer Iron and Steel Company. Mr. Brinsmade is President; Mr. Bedell, Secretary and Treasurer; Mr. William Allen Smith, Assistant Secretary. Mr. Brinsmade made an address explaining fully the object of the new exchange, and predicting bright prospects of success. He was followed by Gen. Stewart L. Woodford, who had many pleasant things to say, finally making way for a general outburst of oratory from nearly every one of the stockholders. Many new names were added to the membership of the Exchange. The regular transaction of business began on the following day.

BEFORE HIS TIME.

The history of the world proves that almost every decided advancement in civilization was foreshadowed more or less completely by men of advanced knowledge, who are commonly said to have been "before their time." Mankind has often, by writers and speakers, been divided into classes, and we may, therefore, follow the example so often set, and look upon men as consisting (1) of those who think they see far enough forward to propose for adoption something nearly akin to perfection. This class has little business acumen, and would have the world move forward by leaps and bounds. A good example of this class is to be seen in the modern sanitarian, who preaches perfection and anathematizes the world because it does not act at once. Our houses, our cities, our children, ourselves are to be healthy and happy if we would but follow the golden rules so energetically put forward. Few of these men do any good. They, in fact, aim at cheap popularity and election in certain select societies. They obtain their desires, and the world jogs on without ever considering that, according to these men, "what is is wrong."

The second class of men is of a different stamp. It is to them the world owes its progress, and we would that more belonged to this class. These men are as farsighted as those in class 1, but combine a modicum of common sense with extensive knowledge. They know that the world moves slowly. They know it costs money to change all that exists, and that any attempt to change rapidly will be frustrated, because the necessary money is not forthcoming. They, therefore, take the world as they find it, and suggest such improvements as are practicable under the circumstances. It is to their efforts, persistent through evil and through good report as they have been, that we owe what little improvements we have in sanitary and other matters. Towns of health, though the description may cause a flutter through the ranks of an amateurish and *dilettante* society, are not, and will not be, built, for the simple reason, it would not pay.

The third class to which we would refer includes all those who are quite convinced that "what is is best." They would have no change, minor or fundamental.

Our readers can study these different classes for themselves, and decide to which they would belong. We have long ago come to the conclusion that the man who keeps but slightly in advance of his fellows, while, however, his knowledge extends far ahead, is the man whom the world should delight to honor.—*Contract Journal.*

CONCERNING STREET PAVEMENTS.

Of all the streets of all the cities in the world, it is safe to say that those of Chicago at present are the filthiest.—*Chicago Tribune.*

They cannot be worse than those of Cincinnati, which are impassable from ill repair. There are few streets in the Ohio metropolis through which carriages can be driven at a trot, the pavement being full of holes, and horse-car tracks miserably kept. Western cities depend upon the contract system to repair and clean their streets, and it is a sorry failure. Cleveland is well-paved with limestone blocks, and better kept than the average; but her famous Euclid avenue out to the tomb of Garfield is in execrable shape, the asphalt and wooden experiments having been all cut to ribbons. No city in the country has streets so well dressed as those of Washington, where the mild climate enables the asphalt, the ideal pavement, to retain its toughness, as it does at Paris. More northern cities cannot use it; neither can those which have a heavy draying business, necessitated by manufacturing industries. As to stone-paved streets, those of Boston are kept in the best order. A city with shabby streets is a dear place to do business in, for the first requisite of a public place for the congregation of human beings is not met. To have good streets, every city should establish a responsible one-man power to direct the outlay of the funds appropriated, answerable to the executive of the city for the neglect of duty.—*Springfield Republican.*

COST OF LIVING AND LABOR IN NEW YORK.

Thousands of families, educated, refined, fastidious, have not, from all sources; more than $2,000 a year, and yet they manage to live, even to present a fair outside appearance. But they must practice no end of self-denial, and make any number of shifts and turns to eke out subsistence with so little money. Five thousand dollars is really as small a sum as a family consisting of man and wife and one or two children can live on here with any degree of comfort; and they who have $5,000 are as one in a hundred. In no city on the globe, I dare say, is there so much friction and wistfulness among educated persons over the prosaic business of making both ends meet as there is in New York. I wonder why people without income proper are willing to stay here, when they might dwell elsewhere with so much less wear-and-tear of nerve and mind. But it seems as if everybody wanted to come to New York, with or without prospects, whether they are competent or incompetent. It is always so with a great city, which, like all great bodies, attracts by a natural law. Hundreds and thousands who ought to have demonstrated their inability to get on in the smaller towns, hurry to this multitudinous center, vainly hoping that it will change their nature by lending them an efficiency never before revealed. We are constantly hearing of the struggle for wealth in New York. There is a great and interminable struggle; but it is simply the struggle for existence; since not one in a thousand of our entire population has the least reason to believe that he will be wealthy, or regards wealth except as he might look after the unattainable. Mechanics seem, just now, to have better prospects than any other class, unless they insist on wages that will not be paid. There has been more advance in their wages proportionately during the last year and a half than in the prices of any other kind of labor. Their demands are so great that it is thought building will hereafter be far less active than has been anticipated. I imagine, however, that the demands will be met, as they always are, and that the city will continue to push ahead at an amazing rate. I doubt if there would be any objection to giving mechanics all that they ask, if the bulk of them were competent. But they are very incompetent, more so than they have been for years. Most of the houses erected recently have been ill-constructed from this cause; builders saying that it is almost impossible to get any number of good or competent workmen. Any number of careless fellows who have not half learned their trade have flocked to the city, prompted by the high prices. It is thought that a great many of the tramps who used to infest the country have gone to work in an indifferent way, and have really done more harm by their spasmodic diligence than they did by their habitual vagabondage. I have never heard so much complaint of poor work by carpenters, plasterers, plumbers, painters, masons, steamfitters and the like, as within the last 18 months. The complaints, too, are well based, as results attest. Many houses, especially dwellings, put up recently, will have to be virtually rebuilt, and several are rebuilding now. The wood-work, alds tering, brick-work and everything else is so poor as to be rapidly coming to pieces, and to demand therefore immediate reconstructions. It costs more in money, not to speak of time and interminable bother, to build a poor house twice than to build a good house once, as a number of our citizens are discovering to their sorrow.—*Correspondence Springfield Republican.*

THE NEW LOTS WATER DISPUTE.

The suit of Joseph Schluchtner, Jacob W. Erreger and others, taxpayers of the town of New Lots, against the Town Board and the Long Island Water Supply Company, came up in the Special Term of the Supreme Court this morning before Judge Pratt. The action is brought for an injunction and that the contract with the company be declared void. The matter has been in dispute for some time. A contract was made for 25 years with the water company to furnish water to the town at an annual cost of $15,500, the company to lay the pipes. The citizens' association of the town fought the matter and brought it into court. They claim the amount for which the contract is let is too large. The complainants allege that in 1881 taxes amounting to $44,155.18 were levied in the town; that the majority of the taxpayers are persons of limited means, who could ill afford to pay the rate demanded. In July last certain persons made application to the Town Board for a contract to supply the town with water. Plaintiffs claim the application did not comply with the requirements of the law; that the board granted the application without ascertaining if the water to be furnished was wholesome. On the 20th of July, 1880, other parties made application to the Town Board for the contract, but that the board wrongfully refused to consider the application; that certain of the town authorities wilfully absented themselves from the meeting called to consider the second application. It is further alleged that there was no competition in giving out the contract, and that three members of the Town Board refused to sign the contract with the Long Island Water Supply Company, and that it was signed by the other members of the board, who were the very men who prevented competition. The contract calls for 200 hydrants, and in this the plaintiffs claim a fraud was committed, as the number is greatly in excess of the number needed by the town; that thirty would be enough.

The defense is a general denial. For the taxpayers, Judge Samuel D. Morris; for the Town Board, Joshua Van Cott and William D. Veeder; for the water company, Jesse Johnson. The case is still on.

SEWER GAS.

In our April number we presented the preamble, and certain very judicious and sound conclusions on the dangers of privies and cesspools in villages and small cities, deduced from the report of Mr. James T. Gardiner, Director of the New York State Survey, and one of the members of the State Board of Health, on the various systems of sewage disposal recently observed by him in some of the chief cities and small towns of England. Mr. Gardiner has evidently observed carefully, and has come to wise conclusions, in the main, on the advantages of the separate system of sewerage and storm-water conduits, but he is too sweeping in his conclusions—regardless of all circumstances, and the possible advantages of combining both systems (the separate and combined)—under certain conditions. And he goes very much out of his sphere, both as surveyor and engineer, to pronounce judgment from any light he has thrown on the subject, when he asserts that, "It is time to call attention to the *fact* that no such gas as '*sewer-gas*' exists, and that *there is absolutely no proof that the diseases which attend the admission of sewer air into a dwelling are produced by gases.* On the contrary, the whole tendency of modern investigation is to show that the zymotic diseases are produced by *bacteria*, whose germs are developed under favorable conditions. It is well known that the most favorable conditions for the growth of these low organisms are heat, moisture, darkness, and the *presence of ammonia.* The damp walls of sewers present, therefore, all the requirements for a most flourishing growth of bacteria, whose germs may float off on the sewer-air and be carried into dwellings by mechanical action, and dust is borne on any air current." This, in the face of such searching investigators as Curtis, Satterthwaite, Senator, Billroth, Lebert, Wagner, Beale, Jacobi, Wood and Formad—and many others cited by these last-named and most recent searchers—who have failed to find, and several of them utterly deny the bacterian origin of zymotic diseases—is, to say the least, a very rash conclusion on the part of Mr. Gardiner, who throws no light on the subject. What he says about the filthy, damp walls of sewers unnecessarily large, is unquestionably true; and that such holds of filth in the process of putrefaction are

far from being devoid of danger, is equally true. But that the myriads of bacteria and other low organisms which flourish and die in such places, in conjunction with the putrefying matter on which they feed, without giving off any gases of decay—any "sewer gas," as it is commonly called—and that such cases are innocuous, while the living bacterian scavengers there found, fulfilling their chief purpose of converting putrefying organic matter into *living* matter, are the sole cause of zymotic diseases, is in much greater need of proof then the mischievous effect of sewer air *per se*.—*Sanitarian*.

WORCESTER SEWERAGE.

Since the report of the experts of the State Board of Massachusetts, published in No. 19 of ENGINEERING NEWS, a bill has been reported in the State Senate of Massachusetts of the following character:

The city of Worcester is directed within two years to enter upon the work of purifying from all offensive, contaminating, noxious and polluting properties, the water or substances that may thereafter be discharged from its sewers into Blackstone River, so that said waters and substances shall not of themselves or in connection with other matter, create a nuisance or endanger the public health. After five years the city shall cease to empty any substances into the river until purified to the satisfaction of the State Board of Health. The compelling of pollutors to cease their pollution, the taking of lands and the raising of money are further provided for in a general way.

The only objection to the bill would seem to be its local bearing. Such a bill is demanded by the best interests of the community at large, and we scarcely doubt that Massachusetts will set the example in this matter of the public health.

CONGRESSIONAL NOTES.

Bills for the erection of public buildings in the following places have been introduced in Congress during the past month: Natchitoches, La.; Camden, N. J.; Lima, O.; New Castle, Del.; Wilmington, Del.; West Chester, Pa.; Chester, Pa.

The Committee on Public Buildings and Grounds reported favorably on bill for erection of public building at Paterson, N. J.; Jefferson City, Mo.; Carson City, Nev.; Lynchburg, Va.; Quincy, Ill.; and for extension of Executive Mansion at Washington.

Bills were passed for public buildings at Syracuse, N. Y.; Hannibal, Mo.; Frankfort, Ky.; Detroit, Mich.; Jackson, Tenn.; Denver, Col.; Greensboro', N. C.; Council Bluffs, Iowa; Lynchburg, Va.; Peoria, Ill.; Galveston, Texas; Quincy, Ill.; and Hannibal, Mo.

Among the miscellaneous bills passed was one for the erection of a monument to Thomas Jefferson; for an immediate appropriation of $50,000 for removal of obstructions at Hell Gate, N. Y., and an immediate appropriation to continue work on the Washington monument.

WASHINGTON, D. C., May 8, 1882

The House Committee on Manufactures have agreed on the bill authorizing the President to appoint a commission of seven experts skilled in the investigation, production and use of metallic substances and other structural materials, to execute tests and experiments on iron, steel and other materials used in the construction of bridges, buildings and mechanical structures.

The House Committee on Public Buildings and Grounds have agreed to recommend an appropriation of $75,000 for a public building at Dayton, O., and $25,000 for one at Jefferson, Tex.

The House Committee on Indian Affairs to-day agreed to recommend concurrence in the Senate amendments to the bill granting right of way for a railroad and telegraph line through the lands of the Choctaw and Chickasaw nations to the St. Louis & San Francisco Railway Company.

THE NEW CHINESE BILL.

The bill provides that from ninety days after its passage the coming of Chinese laborers to this country shall be suspended for ten years; that any master of a vessel who knowingly lands Chinese laborers in this country shall be subject to a fine of not more than $500 for each laborer, and the Chinese laborer himself shall be subject to imprisonment for not more than one year; Chinese laborers who came here before November 17th, 1880, or who shall come before the expiration of ninety days after the passage of the bill, are excepted; that the excepted Chinamen shall be registered by collectors of customs, and furnished with certificates to show their right to come to and go from the United States of their own free will; that Chinamen who are not laborers shall be identified by a certificate of the Chinese Government to show that they are entitled to come to this country; that no Chinamen shall be permitted to enter the United States by land without producing such a certificate; that the credentials of diplomatic and other officers of the Chinese Government traveling upon the business of that Government shall be taken as equivalent to such certificates, and shall exempt them and their servants; that hereafter no State or United States court shall admit a Chinaman to citizenship; that the words "Chinese laborers" shall be construed to mean both skilled and unskilled laborers and Chinese employed in mining. There are other sections providing for the punishment of the making of false certificates and for the removal of Chinese who may come into the country by land contrary to the provisions of the act.

The bill has been approved by the President.

NOTES.

FRANKLIN INSTITUTE MEETING.—At the meeting of the Franklin Institute on Wednesday night, C. Colon, representing the De Lesseps Canal Company, read a long paper describing the work done preparatory to cutting the Panama Canal, and said that the company would demonstrate that it was not in any sense anti-American, but was, on the contrary, deserving of the full sympathy and support of the American people. Professor Houston called attention to the dangerous character of the sewage emptied into the Schuylkill River near the eastern end of Girard avenue bridge, close to the Spring Garden Water-Works, and within less than a mile of the Fairmount Works. On motion of Mr. Chabot, the president was authorized to appoint a committee to prepare a memorial to Councils on the subject, to be submitted to the Institute at its next meeting.

BUILDERS' QUANTITIES.

A cord of stone, three bushels of lime and a cubic yard of sand will lay 100 cubic ft. of wall. Five courses of brick will lay one foot in height on a chimney. Nine bricks in a course will make a flue 8 in. wide and 20 in. long, and 8 bricks in a course will make a flue 8 in. wide and 16 in. long. Eight bushels of good lime, 16 bushels of sand and one bushel of hair will make enough mortar to plaster 100 square yards. One-fifth more siding and flooring is needed than the number of square feet of surface to be covered, because of the lap in the siding and matching of floor. One thousand laths will cover 70 yards of surface, and 11 pounds of lath nails will nail them on. One thousand shingles laid 4 in. to the weather will cover 100 square ft. of surface, and 5 pounds of shingle nails will fasten them on.

THE NEW RAILROAD BRIDGE OVER THE DES MOINES.—This structure is the design of Mr. Kinney, Chief Engineer of the St. Louis, Des Moines & Northern Railroad, assisted by Mr. Chas. F. Loweth, recently of the Edgemoor Iron Works. It was erected by Messrs. Raymond & Campbell, of Council Bluffs, Ia. It is a "combination" bridge, 2,020 ft. long, including approaches, the bridge proper being composed of two spans of 175 ft. each, between centres. It is 101 ft. above ordinary water in the river, the water below ranging from 6 to 14 ft. depth. It is supported on eight large iron cylinders, with the usual piers and trusses. The largest cylinders are 31 ft., the others 27 and 29 ft. The piers are 52 ft. high from the top of the cylinder to the lowest truss. The truss is 28 ft. high. In sinking the iron cylinders they passed through first a bed of sand, next a bed of bowlders, and are now resting on a bed of soapstone rock. The structure contains 742,000 ft. of pine lumber, 175,000 ft. of oak and took 19,000 lineal feet of piling. The highest bent of the trestle is 93 ft. high. It was begun about the middle of last August, and would have been completed before this but for delay in receiving iron and lumber.

THE OLDEST TIMBER.—The ancient temples of Egypt are believed to contain the oldest timber in the world, in the shape of dowel-pins, which are incorporated with stone work known to be not less than 4,000 years old. These dowel-pins, according to the appearance they present, are thought to have been made from the tamarisk or shittim wood, in ancient times a sacred tree in Egypt.

GENERAL INTELLIGENCE.

☞ *We solicit and are always pleased to publish in these columns any items of interest that may be furnished us.*

GAS AND WATER.

LONDON EAST, Ontario, wants $40,000 worth of waterworks.

THE Erie, Pa., Gas Company is about to rebuild their works, the present establishment being inadequate in size for the purpose.

HIGH AND LOW PRESSURE.—The Boston *Journal* says: "The Beverly authorities complained of low pressure in their supply a number of months ago, and the Salem Water Board went to an expense of $4,000 to give a higher service, and this has been applied with a result of bursting the pipes in many places. The Beverly people now say "Enough," and in compliance with their request the Salem authorities are lessening the pressure.

WANTS TO BUILD WATER-WORKS.—The Common Council of Plainfield, N. J., has received a proposition from a company of capitalists to supply the city with water. Action will probaby be taken at the first meeting in June.

NEW PUMPING ENGINE.—The Columbus, Ohio, Water Board recently ordered a 10,000,000 gallon engine of the Holly Manufacturing Company, for addition to the present pumping capacity of the city water-works, the engine to be built after a new design with compound steam cylinders, double pumps, crank and fly wheel, and to show a duty of 85,000,000 foot-pounds of water per 100 pounds of coal.

CONCORD, N. H., WATER-WORKS.—The Committee on Prisons has reported a resolve providing for the taking of water for the domestic and other uses of the State Prison at Concord, N. H., from Lake Magog, in Acton, at an estimated cost of $60,000, of which $45,000 are to be expended for construction and $15,000 for land and water damages.

NEW WATER-WORKS.—Corsicana, Texas, has voted for water-works, to cost $75,000, the contract to be entered into at once.

SUING FOR DAMAGES.—The Blackstone Valley manufacturers are suing the City of Worcester, Mass., for $234,000 for pumping water after the giving way of the Lynde Brook reservoir dam.

ADDITIONAL WATER SUPPLY.—The Department of City Works, of Brooklyn, contemplate sinking a large well near their pumping station at Rockville Center.

NEW PUMPING ENGINE ORDERED.—A new pumping engine to cost nearly $400,000 has been ordered for the water-works at Cincinnati, O.

CHICAGO WATER BONDS.—The most favorable bid for the purchase of the issue of $333,000 of the water bonds, bearing interest at the rate of 3.65 per cent., was that of the First National Bank. It offered a premium of $4.10 on the $1,000.

W. C. MCCLALLAN, of Springfield, Mass., has made proposals to the commissioners of Wallingford, Conn., to construct the water-works of that borough, and will probably receive the contract. There will have to be another meeting of the voters to issue bonds, whirh, it is expected, will sell at once at a premium of 3 pe cent., which will go a long way toward paying the first year's interest. Mr. McClallan expects to finish laying the pipe by Jan. 1.

THE supervisor of Lake View, Ill., was authorized to advertise for furnishing and laying water-pipes in all streets where pipes have been ordered laid, and to advertise for coal for the use of the water-works for the ensuing year; also for constructing sewers on Evanston avenue, George avenue and Dempster place.

ELECTRICITY.

LAFAYETTE, Ind., is in favor of supplanting gas in that city with the electric light.

TELEGRAPH PROJECT.—It is stated that a company will soon be formed in Boston for the purpose of building a telegraph line from New York to Chicago.

EVANSVILLE, Ind., has contracted for the Brush electric light, and the Elgin Tubular Iron Tower Company will furnish six towers, 250 ft. high, and a Detroit firm the engine, boilers, etc., for the works. It is claimed that the city will be illuminated by the light in 90 days.

LIGHT IN MINNEAPOLIS.—It is proposed to erect as soon as possible a tower 150 ft. high at the east end of the city hall, for four electric lights of 2,000 candlepower each. In the opinion of the company this will illuminate a radius of fully one-half mile.

THE Edison Electric Light Company has laid about 67,700 ft. of conductors underground in New York City, and has yet to lay about 14,300 ft. Rapid progress is being made toward completing the arrangements for lighting what they call the First District, and it is expected that the light will be turned on within a few weeks.

STREETS, DRAINAGE, ETC.

OCONOMOWOC, Wis., will soon advertise for bids for about 1,000 ft. of sewers.

PAVEMENT DEFERRED.—Both the granite and cedar block pavement schemes for Washington Ave., Minneapolis, have been abandoned by the city council.

FOR MACADAMIZING Kinzie street, from Peoria to Morgan street, Chicago, the lowest bid was that of Jencks & Thatcher, who offered to do the work for $1.43 per square yard.

A $25,000 ROAD.—The House, under a suspension of the rules, has appropriated $25,000 to be experded under the direction of the Secretary of War in grading and macademizing a road from Mound City, Ill., to the national cemetery, one mile distant.

PHILADELPHIA proposes to spend $20,000 in Rittenhouse Square improvement, and also other moneys on improving other public squares.

MINNEAPOLIS is still undecided on the paving question. The streets need it, the people demand it, but the City Council is trying to solve the problem "Which is the best?"

NEW PAVEMENTS TO BE LAID.—The Commissioners have made an order that the engineer department, Washington, advertise for proposals for laying pavements as follows: Asphalt pavements on C, between 3d and 4½ streets northwest, and 16th street, between Scott circle and R street northwest; granite block pavements on C, between 1st and 3d northeast; 3d street, between C and D northeast; C, between 2d and 3d streets northwest; 1st street, from Massachusetts avenue to H street northwest; 1st street, from Defrees to I street north-

west; 26th street, from Pennsylvania avenue to K street northwest; 29th street, from M to N street, Georgetown; for grading and regulating South Capitol street from N street to Eastern branch.

RIVERS AND HARBORS.

THE 50 tide breakers at Gangway ledge in Portsmouth harbor, to protect government contractors while removing the ledge, have been carried away by high tides.

ONTARIO LIGHT-HOUSES.—Out of the amount of $40,000 in the supplementary estimates for 1883 for light-houses, the following are for Ontario: Two new lights in the Algoma district, namely, Cape Robert and Missauqua Island, $4,000; light-house at Hope Island, Georgian Bay, $3,000; light-house at Port Credit, Lake Ontario, $2,000; light house at Colchester Reef, Lake Erie, on account, $10,000; small lights upper Ontario, $400.

BUFFALO HARBOR entrance needs dredging badly.

PIER IMPROVEMENTS.—Work has begun on the pier improvements at Oconto, Wis.

A PARAGRAPH in the River and Harbor bill provides "that hereafter no survey of a river or harbor shall be made by the Secretary of War until after the latter shall have detailed the local engineer to make a preliminary examination of said river or harbor and reported upon the question whether there is any good reason or justification for making the proposed survey." This provision will, it is believed, prevent the expenditure of much labor and money in preliminary surveys of creeks and inlets. One member asked the committee last week to provide in the bill for 20 of these surveys.

RAILROADS.

THE N. & W. R. R.—The net earnings of the Norfolk & Western Railroad for March were $67,161, and for the first three months of the year they were $187,236, being a decrease as compared with the same period of 1881 of $34,412.

NEW REORGANIZATION.—The list of new crop railway enterprises requiring financial reorganization already includes the Toledo, Delphos & Burlington, Connotton Valley and the Massachusetts Central, with a very good prospect that the list will be greatly extended before many months. It is not likely, however, that the number will compare at all with the list furnished by the panic of the last decade.—*Boston Journal.*

A MYSTERIOUS survey for a railroad from Wheeling, W. Va., to Harrisburg, Pa., is in progress, and people down that way are hoping that Jay Gould and actual construction are behind it.

STORAGE OF UNCLAIMED BAGGAGE.—All the railroad companies terminating at Chicago have determined to place in public warehouses all baggage brought in by their trains that is allowed to remain in their depots more than 24 hours after its arrival. This determination has been brought about by the fact that it has become almost a custom for incoming passengers to allow their baggage to remain in the depots here for periods ranging from a week to two or three months; and the result has been that all of the baggage-rooms are so crowded that it is almost impossible for the railroad companies to handle baggage of out-going passengers. The railroads have determined to charge 25 cents storage for the first day, and from 10 to 25 cents for each subsequent day after the first that the baggage is held in their warehouses. The railroad companies will hold the baggage free of storage 24 hours and no more after its arrival at Chicago. This new rule will take effect on most of the roads Wednesday, May 10, and on all of them by Thursday, June 1.

DURING the month of April 38,100,000 pounds of ore passed over the Nashville & Chattanooga Railroad through Chattanooga, Tenn., and since Jan. 1, 1881, 200,000,000 tons have passed over the road.

A CONTRADICTION.—The builders of the New York, Chicago & St. Louis Railroad reply in detail to the statements contained in a circular issued by a firm of brokers. The reply is as follows:

Our attention has been called to a circular letter issued by Messrs. Breese & Smith, brokers, in which certain statements are made regarding the New York, Chicago & St. Louis R. R. Co., which are calculated to alarm the holders of the securities of that company. We briefly answer the main assertions. Messrs. Breese & Smith say: Firstly, that no contract has been made with the Illinois Central R. R. Co. for the use of their terminal facilities in Chicago. This is false. A contract has been duly executed by the proper officers of both railroad companies, and approved by the board of directors, for the use of all the terminal facilities which the company will require in Chicago. Secondly, they state that the road is not laid with steel rails, but old rails. This is false. The entire line is laid with new steel rails of the best quality. Thirdly, they state that the trestles along the line are of wood and insecure. This is false. The bridges and trestles are of iron, with stone abutments, except in some places where temporary trestles are used until the same can be filled with earth. Fourthly, they assert that the entire funds of the company are exhausted, and the company has not the means for finishing the road. This is false. The company has raised all the funds necessary to thoroughly build and equip the road. Fifthly, they assert that the company will own no rolling stock, but have made a contract by which the rolling stock is leased by the Messrs. Pullman. This is false. The company has already purchased $6,000,000 worth of rolling stock, separate and in addition to the contracts with the Messrs. Pullman, which relate only to sleeping-cars, and is similar to the contracts with the Pennsylvania Central R. R. Co. and other large railroad companies. Sixthly, they say that the bonded debt of the company is unlimited. This is false. The limit of the mortgage debt is $15,000,000. Seventhly, they assert that no grounds are secured in South Chicago for shops. This is false. The Calumet Canal Company, of Chicago, has agreed to donate 60 acres of land in South Chicago to the company for the erection of shops. If the assertions had been mere matters of opinion, we would not have noticed them; but where a firm publicly make assertions as facts which are absolutely false, and regarding which they could have readily ascertained the truth by making inquiries either at the company's offices or at our own in this city, we think we owe it to the holders of the securities of the company to contradict them.

BROWN, HOWARD & CO.,
Contractors.
B. G. MITCHELL,
Secretary and Treasurer.

ROAD TO BE SOLD.—Judge Graham has granted a decree in the United States Court, in Indianapolis, for the foreclosure of the second and third mortgages on the Indianapolis & St. Louis Railroad, suit having been brought by H. B. Hurlbut, trustee. The second mortgage is for $1,000,000, and the third mortgage $500,000, and the sale is subject to the first mortgage of 2,000,000. The Court ordered that in the event of the amount due not being paid into Court within ten days, the road is to be sold within fifty days of the date of the decree. The parties interested in the property are the Bee Line, the Pennsylvania Company, and the St. Louis, Alton & Terre Haute railroad companies, the latter owning that portion of the road extending from Terre Haute to St. Louis.

PROGRESS IN TEXAS.—The Galveston *News* says: Iron is laid on the Trinity & Sabine Railway to the thirteenth mile. Work was delayed a short time on the tenth mile by a widow and a shotgun. The widow threatened to shoot the first man who stepped on her land. The matter was finally settled, and the widow agreed to leave her shotgun at home. Superintendent Harding is out to the end of the line inspecting timber and looking up the best route to be taken.

BEYOND THE MISSOURI.—A dispatch from Cheyenne says: "Articles of incorporation of the Dakota, Wyoming & Western Railroad Company have been filed here, providing for the continuation of the main road from the Eastern Wyoming line to the Yellowstone National Park; also a branch line from Cheyenne north to intersect with the main road near Hot Creek. The length of the road to be built in Wyoming is estimated to be 500 miles. The capital of the company is fixed at $12,500,000."

J. T. ODELL, General Superintendent of the Chicago, Texas & Mexican Central Railroad, says that satisfactory arrangements have been made to pay off the indebtedness of the road and relieve it of all embarrassments preventing construction.

JAMAICA RAILWAYS.—Messrs. Reid & Mackay, of 13A Great George street, S. W., London, have in hand the contract for the construction of the Jamaica Government Railway Extensions.

NEW RAILROAD COMPANY.—An Albany (N. Y.) dispatch of the 16th says: "The articles of the association of the Schenectady, Albany & North Adams Railroad Company were filed to-day. The road is to extend from Schenectady to Albany, cross the new bridge, and thence on to North Adams and the Hoosac Tunnel, the whole length being 72½ miles. The capital stock is $2,000,000, divided into shares of $100 each.

DOMINION AFFAIRS.—WINNIPEG, Man., May 16.—The Government General Railway act, which was introduced to secure the building of railways in the province has been withdrawn, bitter opposition having been manifested to some of its provisions.

THE TEXAS PACIFIC.—But ninety miles of track laying remains to be done in Texas to make a through railroad connection between San Francisco and New Orleans. It is expected the work will be completed Sept. 1.

COLUMBUS, O., is talking of an elevated railroad.

A SURVEY is now being made of the Duluth & Iron Range Railroad.

THE St. Paul & Duluth road has just laid 15 miles of steel track in place of iron, beginning at Rush City and going north. In all, 36 miles of steel rail are to be laid this season, leaving about 27 miles more to be finished. By the 1st of June there will be, in all, 129 miles of steel track in the road. The company is also putting in 100,000 ties and using 100 cars of gravel daily in ballasting from Rush City north.

THE CANADA & ATLANTIC.—Work on the Canada & Atlantic Railway is progressing rapidly. It is expected the road will be completed in the course of two months.

PENNSYLVANIA RAILROAD.—Construction of a branch from Pocomoke City, Worcester County, Md., to Cherrystone, Northampton County, Va., about 50 miles distance, is soon to be begun.

THE Chicago, St. Louis & Western Railroad Company is incorporated. It is to be practically an extension of the Chicago, Pekin & Southwestern road to Chicago, and will be only 33 miles long.

THE Pemigewasset Valley Railroad (N. H.) contractors, unable to secure enough Irish employés, are bringing numbers of Italians to work on the dumps.

THE New York, West Shore & Buffalo Railway Company will erect a round-house and repair shops in Kingston, N. Y. The bridge across Rondout Creek, where the road will enter that city from the south, will be of iron and very substantial. It will be 150 ft. above the water and nearly 700 ft. long. The two main spans will be 255 ft. and 235 ft. in length respectively. The piers will be of iron resting upon solid masonry.

THE Dakota, Wyoming & Western Railroad Company has filed papers of incorporation to provide for the continuation of the main road from the Eastern Wyoming line to the Yellowstone National Park; also a branch line from Cheyenne north to intersect with the main road near Hot Creek. The length of the road to be built in Wyoming is estimated to be 500 miles. The capital of the company is fixed at $12,500,000.

RAILROAD CONSOLIDATION.—The New River Railroad Company, of Virginia; the New River Railroad Company, of West Virginia, and the East River Railroad Company, whose lines have been controlled and under construction by the Norfolk & Western Railroad Company, have been consolidated into the Norfolk & Western Railroad Company. The roads thus acquired will be known as the New River Division of the Norfolk & Western Railroad Company, and will be in operation in the early autumn.

NEW WASHINGTON TERRITORY ROAD.—CHEYENNE, W. T., May 13.—Articles of incorporation of the Dakota, Wyoming & Western Railroad, filed here to-day, provide for a continuation of the main road from the eastern Wyoming line to the Yellowstone National Park; also a branch from Cheyenne north, to intersect with main road near Hat Creek. Five hundred miles is estimated as the length to be built in Wyoming. The capital is fixed at $12,500,000.

THE sum of $100,000 is wanted to build the proposed railroad from Gettysburg to Hunter's Run, Pa.

NEW ILLINOIS PROJECT.—Articles of incorporation of the Chicago, St. Louis & Western Railway Company have been filed. The new line is to be 38 miles long, running from the terminus of the Chicago, Pekin & Southwestern at Joliet to a connection with the line of the Chicago & Western Indiana, near Dalton.

THE MEXICAN CENTRAL.—From a Mexican correspondent we have received the following: The grade is virtually completed to the City of Chihuahua, 224 miles south, and track is laid 157 miles. Contractors are moving to the first 50 miles south of Chihuahua. It is probable that the first week in June will see regular trains running into that city and contractors strung out for 100 miles south. On May 4 the road was opened for business from Paso del Norte to Gallego, 140 miles south, and regular passenger trains are running each way daily.

BUILDINGS.

NEW TOWN HALL.—An extra appropriation of $15,000, making about $50,000 in all, besides the lot, will be asked to build the town hall, Adams, Mass., according to the plans. There will be a close fight over the matter at to-day's meeting, and the feeling is pretty general that the $35,000 appropriation made last spring, besides the $10,000 given by the county, is large enough.

HOTEL.—The hotel which is to be built by Mr. Mackay, the millionaire, in London, will be five times as large as the largest of London hotels.

OVERWORKED OFFICIALS.—The mayor bet Supt. Kirkland that the east wall of the new city hall was not more than one inch out of plumb. The mayor lost and paid the bet—a gallon of whisky—yesterday.—*Chicago Times*, 6th.

COURT-HOUSE AND JAIL.—The county seat of Mackinac county, Mich., is to be moved from the village of Mackinac to St. Ignace, on the 18th of September next, and the supervisors have adopted a resolution for a special election on June 5 to submit to the people a proposition to issue bonds for a loan of $17,000 to build a court-house and jail at St. Ignace.

COURT-HOUSE.—Johnson Co., Texas, is to build a new court-house.

DAMAGED CUSTOM-HOUSE.—The magnificent granite custom-house building in New Orleans was damaged by fire on the 11th to the extent of $60,000. Supt. J. W. Glenn reports: The fire has destroyed all the frames, sash and glass of the openings, and the offices from the basement to the roof, including my office, are exposed to the weather. The iron cornice is practically destroyed for nearly half the length of the custom-house street front. The columns at the entrance and the pilasters have their outline destroyed to such an extent as to make substitution necessary.

COURT-HOUSE.—San Antonio, Texas, is to have a new court-house, for which a special tax has just been imposed. D. C. Anderson has the contract. Bond, $10,000.

COLLEGE BUILDING.—Ex-Gov. Charles H. Hardin, the founder of Hardin College, at Mexico, Mo., has just given to the institution $19,000 in cash to build a new wing to the edifice and make other improvements. This makes an aggregate of $70,000 which he has bestowed upon the college.

OPERA-HOUSE.—Plans have been prepared for a new opera-house in Yonkers, N. Y. It will be 72 ft. front and 75 ft. deep, with chairs for 658 persons.

A MARINE HOSPITAL.—A United States Marine Hospital will be erected at Cairo at a cost of $75,000.

THE ST. LOUIS CUSTOM-HOUSE is in need of money to complete it and expects to get it in the sundry civil bill.

SMELTING WORKS.—The Marshall Car and Foundry Company will erect smelting works at Marshall, Tex. Cost $50,000.

COURT-HOUSE.—The new court house at Havanna, Ill., is rapidly nearing completion.

GRANITE BUILDING FOR THIS CITY.—The president of the Farmers' Loan and Trust Company has submitted to the Bureau of Buildings a plan for a granite building for the use of the company. It will have a frontage of 45 ft. and an average depth of 71 ft. Estimated cost $130,000.

NEW CHURCH.—Plans are now being prepared for the erection of a new Catholic church at Rockford, Ill., to be located on the West Side.

WANT TO MAKE IRON AND STEEL IN CANADA.—A number of gentlemen belonging to Ottawa, New York and Niagara Falls have applied for a charter for the establishment of a new iron and steel manufactory in the vicinity of Three Rivers. The company is to be called the Franco-American Mining and Manufacturing Company, with a capital of $500,000.

SCHOOL-HOUSE.—Kewanee, Ill., wants a new school-house.

RESIDENCES.—Mr. Wm. H. Vanderbilt has selected the designs of Mr. Charles B. Atwood, for the houses he proposes to erect on Fifth avenue and Fifty-fourth street; Mr. J. B. Snook will be the constructive architect.

CHAPEL.—A memorial chapel and mission, 66 ft. 6 in. x 118 ft., is to be built on the corner of Avenue A and

Tenth street, N. Y., for St. Mark's Church. It is to be built of stone and will probably cost $100,000.

BUILDING COAL PIERS.—The Reading Railroad Company contemplate extending the coal piers at Port Richmond and constructing a new pier south of the grain elevator.

A DISPATCH from Cincinnati states that the county commissioners have resolved that all parties hereafter awarded contracts by the Board shall be prohibited from sub letting.

DELTA COUNTY, Mich., will build a $17,000 court-house.

ELEVATOR.—The material for the building of elevator C, at Duluth, Minn., is nearly all on hand, and the work of putting it together will be resumed as soon as the weather is more favorable. This elevator will be built this summer. Its capacity will be 1,000,000 bushels, bringing the storage capacity of the three elevators at Duluth up to 2,850,000 bushels.

BRIDGES.

THE MINNEAPOLIS VIADUCT.—Thirteen piers of the great Minneapolis viaduct are now built to above high water mark, and the contractor, E. Darragh, expects to have the remaining piers up to the same height by July 1. He expects to put in some of the centers by June 1.

DAMAGED BRIDGE.—By a rise of 15 ft. in the Brazos River on the 10th, all the false works of the Texas Western Railway bridge were washed away.

NEW BRIDGE CO.—Articles of incorporation have been filed by the Houston (Texas) Bridge & Manufacturing Co.—capital, $50,000—to build bridges and do a general manufacturing business. Directory: C. C. Wiggins, S. C. Oliver, B. C. Simpson, E. J. Heiner and R. J. Alexander.

THE work of widening the famous Magdalen Bridge, at Oxford, England, is already in progress. The extent of the enlargement will be about twenty feet, on what is known as the Botanical Gardens side, so that the side facing southwest, in which lies the chief beauty of the structure, will remain uninjured.

RAISING A BRIDGE.—In order to prevent future danger from floods the Canadian Pacific bridge at Brandon is to be raised six feet.

BRIDGING THE RIO GRANDE.—The iron piers for the first span of the international iron bridge at Laredo have been sunk to bed rock.

BRIDGE.—J. H. Leavitt, of Boston, having decided not to take the new bridge contract, at Lowell, Mass., awarded him for the stone work, the job goes to the next highest bidder, Cheney & Trumbull, for $73,840.50. The work is to be done by Oct. 10.

NEW BRIDGES.—The selectmen of Pittsfield, Mass., have contracted with H. S. Russell for two new iron bridges, each about 84 ft. long, one near Tillotson's mill on the Stearnsville road and the other at Barkerville, opposite Barker Bros.' mill.

BRIDGE FINISHED.—The Connecticut River Road trains now run over the new Cheapside bridge near Greenfield. Before the bridge was used it was thoroughly tested in the presence of President Leonard, Superintendent Mulligan, several of the directors and numerous railroad men. A locomotive, several flat cars, two or three cars of wet sand, weighing 60 tons each, two or three other cars weiging 40 tons each, etc., were run slowly over the structure first, and it deflected 11-16 of an inch. Then they ran across at the rate of 15 miles an hour and the deflection was 10-16 of an inch. The old bridge was burned September 21.

RAILROAD BRIDGE.—WASHINGTON, May 16.—The Senate bill to authorize the Rock Island & Southwestern Railway Company to construct a bridge over the Mississippi at New Boston, Ill., was passed.

LABOR.

MACHINISTS' WAGES in Connecticut range from $2.50 to $4.50 per day.

WAGES IN DELAWARE.—Most of the bricklayers and hod-carriers employed by four Wilmington builders, about fifty workmen in all, struck for higher wages. The bricklayers want $3.50, the mortar men $2.50 and the hod-carriers $2.50 per day, an advance of from 50 to 75 cents.

IN Grand Rapids, Michigan, wages for carpenters are from $2 to $2.50 per day. Mason's wages are from $3 to $4 per day. The demand is good for all kinds of mechanics, with a growing demand for carpenters and masons.

STRIKE.—Most of the bricklayers and hod-carriers of Wilmington, Del., have joined the strikers, and building operations are largely suspended. The strikers have formed themselves into an organization and appointed a committee to wait on their employers. The latter say that they will not accede to the demands of the men, but will, in preference, cover up the work now under way and wait indefinitely.

STRIKE ENDED.—The strike of workmen in the Delaware rolling mill, Phillipsburg, N. J., ended on the 17th at 4 A. M., when work recommenced.

WAGES AND MATERIAL, KANSAS CITY, MO.—Material is said to be more abundant than last year and labor is easier to be had. Brick now can be put in the walls at from $8.50 to $9 per 1,000. Lumber of ordinary dimensions is selling at $24 per M., and wages are no higher than last year. Lumber is about $3 higher and hardware a little higher.

CARPENTERS' WAGES, BALTIMORE.—At a meeting held May 5 the Carpenters' Union decided to make a demand for $2.50 a day on and after May 8. Journeymen now receive $2.25 per day.

LABOR MARKET, PHILADELPHIA.—Some contractors are still refusing to grant the advance asked by the carpenters, and as a consequence their operations are retarded by the continued strike. The majority, however, have conceded the advance.

WAGES AT ST. CATHERINES, ONT.—Laborers on the canal have had their wages increased to $1.50 per day.

STRIKE ON A TEXAS RAILWAY.—Two thousand men employed on the Galveston, Houston & San Antonio Railway, in grading and general construction work, have struck for $2.75 a day. They were receiving $2.50. It is thought the demand of the men will be conceded by the contractors, as the work cannot stop.

STRIKE IN DELAWARE.—Most of the bricklayers, mortar-men and hod carriers of Wilmington, Del., struck for an advance of 50 to 75 cents.

CONCERNING BRICK.—The Bricklayers' union met at Greenebaum's hall, Chicago, on the 12th, and formulated the following proposition to the bosses:

"Finding the grievance existing between the manufacturers of brick and their labor has become a grievance to all who are interested in the prosperity of Chicago, be it

"*Resolved*, That we offer the following proposition to the bosses: That we will, as the Bricklayers' union, agree to work nothing but the brick manufactured by the bosses' union, providing they will agree to manufacture their own brick, and refuse to buy from the present monopoly."

THE MEXICAN CENTRAL RAILROAD calls for 2,000 laborers on the division between Lagos and Guadalajara.

OF COURSE HE PROMISED.—CRITTENDEN, N. M., May 16.—A mob took forcible possession of the railroad, drove the Chinamen from the camp, and hanged D. Scott, Superintendent of Construction, to a telegraph pole until he promised to hire no more Chinamen. *Ex.*

LITERATURE.

IN the *North American Review* for June, Senator W. B. Allison has a paper on "The Currency of the Future," in which he indicates the measures that will have to be taken by Congress for insuring a stable currency after the national debt has been extinguished. "A Memorandum at a Venture," by Walt Whitman, is an explanation of his purpose and point of view in trenching upon topics not usually regarded as amenable to literary treatment. "Andover and Creed Subscription," by Rev. Dr. Leonard Woolsey Bacon, is a philosophical review of the present state of dogmatic belief in the churches. Hon. George F. Seward, late Minister to China, in an article entitled "Mongolian Immigration," makes an argument against the proposed anti Chinese legislation. Doctor John W. Dowling, Dean of the New York Homœopathic Medical College, comes to the defense of the Hahnemannic School of Medicine, against a recent attack upon its principles and methods. O. B. Frothingham has a sympathetic article on Swedenborg. Not the least important paper is one entitled "Has Land a Value?" by Isaac L. Rice, it being a criticism of one of the fundamental postulates of Henry George's political economy. Finally, Charles F. Lydecker essays to prove that a "National Militia" is a constitutional impossibility.

"ALL IS VANITY AND VEXATION, ETC."—A new history of Penobscot County, Maine, done in Western style by a Cleveland firm, has just got a lot of the big and little fry of the county by the ears. It is claimed that ex-Gov. Davis paid $87 to have his picture put in and Gov. Plaisted's kept out, but the book holds the features of each hero, and Davis has actually brought a suit for $1,000 damages against the contractors for breach of contract. Dr. Calvin Seavey paid $150 for an honorable place in the book, but Dr. E. F. Sanger paid a bigger sum to get in and have Seavey left out of all the copies except one—and that one was sent to Seavey. This causes another suit for $1,000 damages. Finally, a flourishing limb of the law, B. C. Additon, who is mentioned as "dead," thinks he can convict them of one mistake at least, and sues them for $5,000.—*Springfield Republican*

CONTRACTS LET.

BOSTON, MASS.—The contracts for iron girders for the sub-treasury will probably be awarded to G. W. and F. Smith, at their bid of $3,160.

EAST BROOKFIELD, Mass.—The contract for building the new school-house has been given to A. D. Ward, of Brookfield, for $6,100.

FLATBUSH, L. I.—The contract for rebuilding and repairing that portion of the lunatic asylum which was recently destroyed by fire has been awarded to P. J. Carlin for $16,243.

WASHINGTON MONUMENT.—Bids for furnishing 39,000 cu. ft. of marble and 23,500 cu. ft. of granite for the Washington monument were opened on the 16th, and the lowest bidder for supplying the marble was found to be Hugh Sisson, of Baltimore, at 35 cents a cubic foot and, for the granite, the Borderell Company, of Maine, at 53 cents.

PITTSBURGH, PA., CONTRACT LET.—The contract for roofing the north wing of the Riverside Penitentiary was on Monday awarded to Riter & Conley at $42,700. The roof is to be wholly of iron and slate, the only wood in the whole building from cellar to roof being the floors to the narrow galleries in front of the different cell tiers and the inside window frames.

MANTLES.—Bids have been opened for furnishing mantles for the north wing of the State, War and Navy Department from Davidson & Sons, of Chicago; Chas. E. Hall & Co., of Boston; A. Klaber, of New York; A. L. Fausbere, of New York; Wentworth, Roberts & Co., of Boston; Hugh Sisson & Sons, of Baltimore, and Robert C. Fisher, of New York. Messrs. Hall & Co., of Boston, are probably the lowest bidders.

SUCCESSFUL BIDDERS to supply clothing, etc., to the army are the following: A. P. Otterdam, Manchester, N. H.; wool stockings; A. H. & B. C. Allang, Birmingham, Ct., cotton stockings; North Wayne Tool Company, Hallowell, Me., axes.

BIDS FOR GRANITE.—The lowest bid for supplying the granite for the Washington monument was from the Bodwell Company, of Maine, at 53 cents per cubic foot. The bid was accepted. The total amount is 23,000 cubic feet.

STONE STEPS.—The contract for cutting steps, etc., for outside of Hartford (Conn.) Post-office, has been awarded to the Clark's Island Granite Co. The building was cut on Clark's Island, Me.

BALTIMORE P. O.—The contract for furnishing the granite for the basement of the new post office at Baltimore, has been awarded to Gen. Davis Tillson of Rockland, Me., the lowest bidder. The bids were as follows: Davis Tillson, $64,950; Bodwell Granite Company, $68,915; Mount Waldo Granite Works, $69,445; Collins Granite Company, $74,401; Old Dominion Granite Company, Va., $77,000; Gill & McMahon, Woodstock, Md., $81,454; M. K. Chase, $88,500; Cape Ann Granite Company, $89,550; Charles Guidet, $104,447; Concord Granite Company, $114,938; J. B. Emory, Baltimore, $118,920. The granite will be furnished from the General's quarries on Hurricane Island, and will be cut there.

JAIL CONTRACT LET.—The County Commissioners of Meeker County, Minn., have let the contract for building a county jail in Litchfield.

MILWAUKEE SEWER CONTRACTS.—Contract for pipe sewer in Lloyd and Booth streets awarded to R. Chambers for $2.42 per lineal foot.

CHICAGO has let contracts for the improvement of several streets. Some bids received were above the assessment, and will be re-advertised.

STONE CANAL.—The bids for the building of a stone canal 1,500 ft. long, and filling the flats on both sides from Dean street bridge to Frye's Mills in Salem, were opened at the City Hall and were as follows: J. H. Leavitt, Boston, $52,000; Balcomb & Co., Salem, $56,080; Conrad, Jewell & Co., Danvers, $58,550; Parsons & Peterson, Salem, $60,458, and the contract was awarded to Mr. Leavitt. The work is to be completed by Nov. 1, 1882.

CONTRACT SIGNED. A contract has been signed by Roger & Ballentine of New Orleans to build the New Orleans & Mississippi Valley Railroad from New Orleans to Baton Rouge, on the east side of the river, by January 1, 1883. The line is to be pushed through to Memphis as rapidly as possible.

MISCELLANEOUS.

NO MORE CONTRACTS.—Supervising Architect Hill states that no further contracts for work upon the government building at Hartford, Conn., will be made until the City Council disposes of the pending bill in reference to street lines.

ELEVATOR.—The contract for erecting the one million bushel elevator for the Union Elevator Company, in the lower part of the city of Peoria, has been awarded to Chicago parties. Work on the structure will begin within two weeks.

RELEASED CONTRACT.—It is rumored at Lafayette, Ind., that negotiations have been on foot some time looking to the release of the court-house contractors from their contract, leaving the thing on the hands of the county board of commissioners in its present incomplete condition.

NEW HAVEN IMPROVEMENTS.—This city will spend $10,000 this summer in improving East Rock park. There it talk of building a $60,000 trunk sewer.

THE NEW ORLEANS & MISSISSIPPI VALLEY RAILWAY from New Orleans to Baton Rouge, on the east side of the river, is to be completed by January 1, 1883.

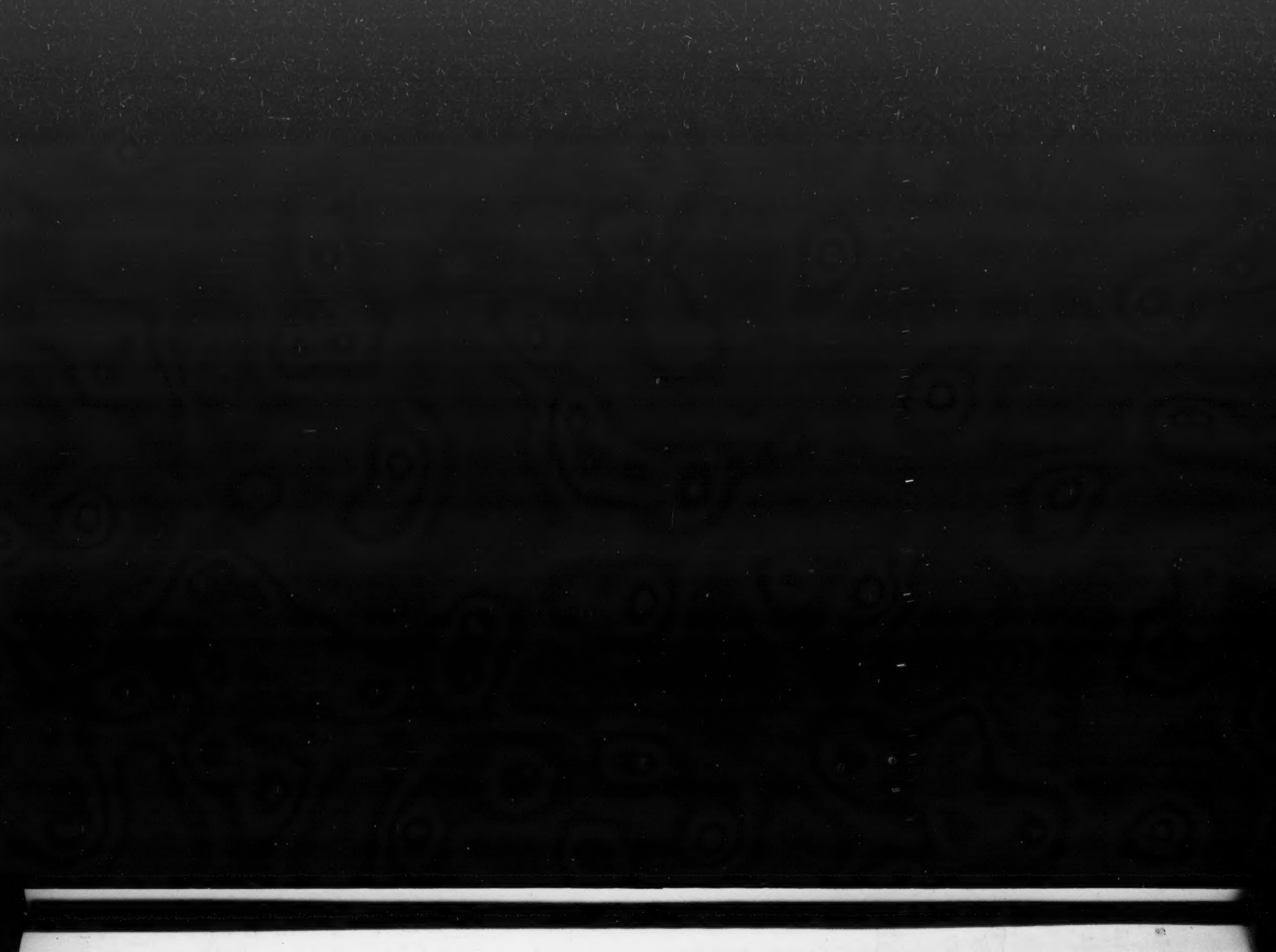
BOUGHT OUT.—The Austin, Tex., capitol syndicate have bought out Matthew Schnell, the original contractor, for $15,500, with the approval of the capitol board. At a meeting of the capitol board, the old board of commissioners and the architect, Mr. Duhamel, were re-elected, and Mr. J. T. Dickerson, of Houston, was elected clerk of the board of commissioners.

TEXAS RAILROAD NEWS.—Nacogdoches *News*, May 4: The Bremond Railroad is progressing finely. The grade is all complete up to the Angelina river, and from Nacogdoches, south, the grade is about finished without an interval for 6 miles. Three or 4 miles work will complete the grading to town.

VICTORIA *Advocate*, May 6: We learn from Mr. Johnston I. C. Thomson, just returned from the West, where he left the New York, Texas & Mexican Railroad engineering corps about 90 miles from Brownville, that the line is being pushed with all possible dispatch to that city, which they hope to reach in about five weeks. The men all enjoyed good health since leaving Victoria.

THE IRON TRADE.—PITTSBURGH, May 17.—The reduction in card rates on iron in Philadelphia will have no effect on the agitation between the iron masters and workingmen here. Neither will there be any kick by the workingmen in Philadelphia against the reduction in wages which the reduction in the selling price of iron carries with it. When iron sells at 2⅛ cents in Philadelphia bailers there get $5 per ton; when iron sells at 2⅛ cents per pound bailers there get $4.75 per ton, which they will accept without murmur, because that is the contract and the policy also of the Amalgamated Association. When iron sells here at 2⅛ cents bailers get $5.80, and when it sells at 2¼ cents here they get $5.50 per ton, which is the price paid for bailing now, though iron is really selling below 2¼ cents. The Philadelphia scale goes as low as 2 cents per pound, and the Pittsburgh scale only as low as 2¼ cents per pound as a basis. The workingmen here have investigated for themselves the condition of the iron market, and at their district meeting next Saturday will probably vote to recall the demand for an increase in the basis of the scales for bailers, rollers and engineers. The manufacturers will probably grant a few extras demanded by the men and then sign the scales which are in force here now.

THE COLLINS GRANITE COMPANY, of East Bluehill, Me., has contracts for cut granite aggregating over $60,000.

THE lowest bid for the new central depot in Rochester, N. Y., having been $150,000, the project is delayed. The Central engineers estimated $110,000 would build it.

SAN ANTONIO, Tex., is to have a brick yard.